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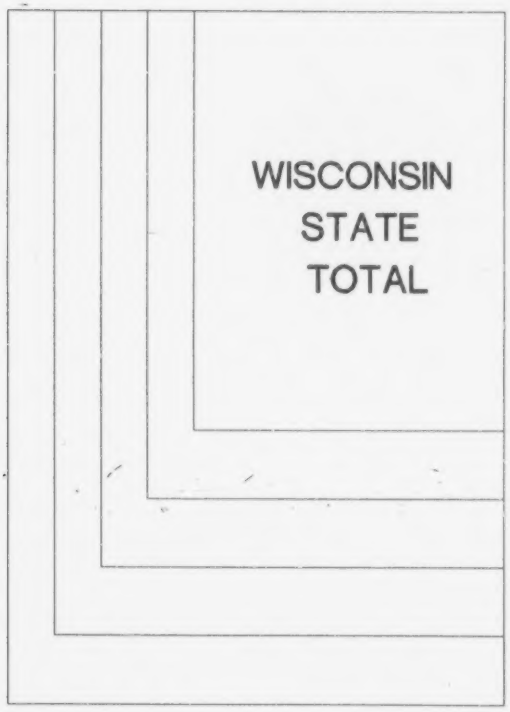
WISCONSIN INDUSTRY PROJECTIONS TO 2000



DILHR

WISCONSIN DEPARTMENT OF
INDUSTRY, LABOR & HUMAN RELATIONS

Wisconsin Industry Projections to 2000

Related LMI Publications:

- *Wisconsin Occupational Projections to 2000*

- *Planning Information for Employment, Training and Industry Development (PIETID)*

Prepared by:

Bureau of Labor Market Information
Division of Employment and Training Policy
Department of Industry, Labor and Human Relations
March 1989

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State of Wisconsin
Department of Industry, Labor and Human Relations

TO: WISCONSIN EDUCATORS, AND EMPLOYMENT PROGRAM PLANNERS

These projections of Wisconsin's labor force and employment to the year 2000 are intended to help educators and all planners concerned about human resources in Wisconsin to prepare for the future.

The labor force that is described here is already born. The separate projections of industry employment were based upon statistical and econometric models; and were then evaluated by economic and labor market analysts. The result of these two projections is a picture of future opportunity with reduced unemployment and the potential for people to work at their highest potential.

This publication has been prepared to meet Federal Job Training Partnership Act and Carl S. Perkins Act requirements. It was also prepared under the Wisconsin Jobs Council mandate to produce state and local labor market and occupational information.

Future publications based in part upon this data include Wisconsin Occupational Projections to 2000 and Wisconsin Planning Information for Employment, Training and Industrial Development (PIETID). Industry and occupational projections and planning reports will also be produced for each of the seventeen Service Delivery Areas (SDA).

Along with the opportunity for all people to work to their highest potential, this report presents a challenge to our department and to training institutions throughout Wisconsin. The challenge is to provide the training that will be needed to permit our economy to grow without the limitations of shortages of skilled and educated workers.

If you have questions or want further information, please call Gerald Snow (608) 266-0230 or Thomas Rondou (608) 266-0689. Any comments you may have that would help to make this or future labor market information publications more useful will be greatly appreciated.

Yours very truly,

John T. Coughlin

John T. Coughlin
Secretary

EXECUTIVE SUMMARY

Separate projections of industry employment and of the labor force indicate a trend toward lower unemployment rates and probable skill shortages in Wisconsin by the year 2000.

Business cycle movements around this trend to lower unemployment will cause periods of higher unemployment. It will be important to maintain training programs during these higher unemployment periods. Business cycle swings around this trend will cause periods of labor shortages when skilled workers will be in short supply.

An era of unprecedented rapid employment growth ended in the United States and in Wisconsin in 1979 when many manufacturing industries reached their highest employment. Nonfarm wage and salary employment will grow at a somewhat slower pace in Wisconsin to the year 2000. This slower growth is similar to national projections, and will be similar to the 1954 to 1965 employment growth rate.

Employment in the service producing industries has grown much faster than employment in the goods producing industries since 1954 when our current series of data began. This trend will continue.

The labor force will continue to grow to the year 2000, but at a much slower pace than during the 1965 to 1982 years of unusually rapid growth. This slower labor force growth indicates a probable trend toward lower unemployment rates and to increasing concern over skill shortages. Skill shortages could at times cause bottlenecks that will limit employment growth.

Fewer younger workers will be entering the labor force. Much of the labor force growth will be due to continuing increased labor participation rates for women. The need for skilled workers and for new skills may have to be met through retraining of experienced workers including increased numbers of women over 35 years of age.

Shortages of younger workers will cause changes in industries that have relied upon young part time help. Younger workers will find it easier to get a job. This may have some impact upon higher education and the supply of workers with technical skills.

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Industry Employment
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Intended Audience and Purpose

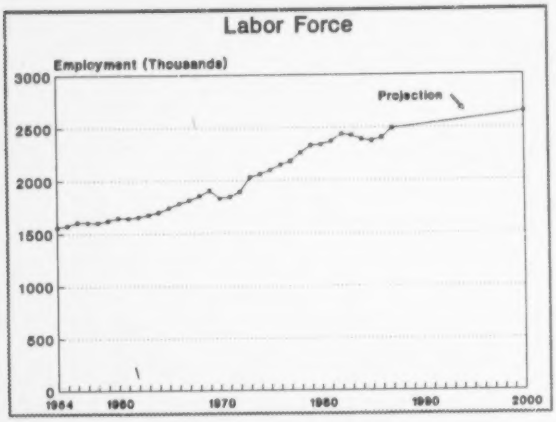
The purpose of this report is to provide information about trends that will have some impact on Wisconsin's economy. The report discusses trends concerning employment and unemployment levels, potential skills shortages, increases in an aging workforce, and expanded participation of women in the workplace.

This publication is intended for use by a number of groups: employers in carrying out their human resource program planning; schools and employment and training agencies in developing job training programs; businesses in planning marketing strategies; and state and local policy makers in planning for the future.

The **Executive Summary** and **Industry Employment and Labor Force Projections** portions of the report are intended for a broad audience, while the **Methodology** and **Statistical Tables** portion will be of most interest to labor market information practitioners.

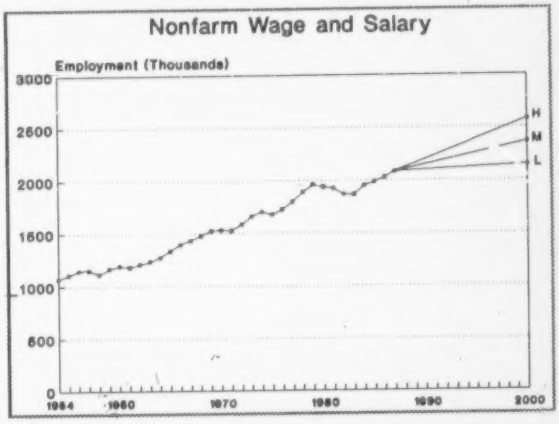
Supply and Demand

This report brings together separate projections of Wisconsin labor force and of nonfarm industry employment to the year 2000. Together, the two projections tell of changes in the future supply and demand for workers.

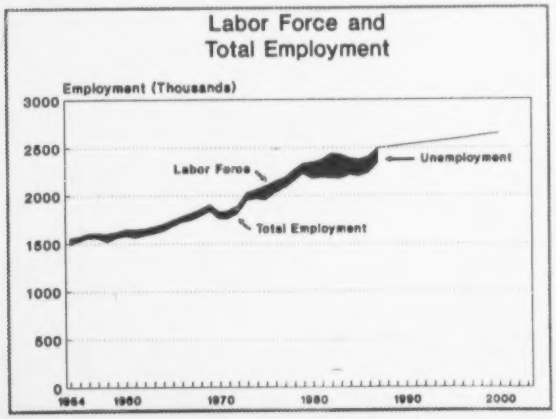


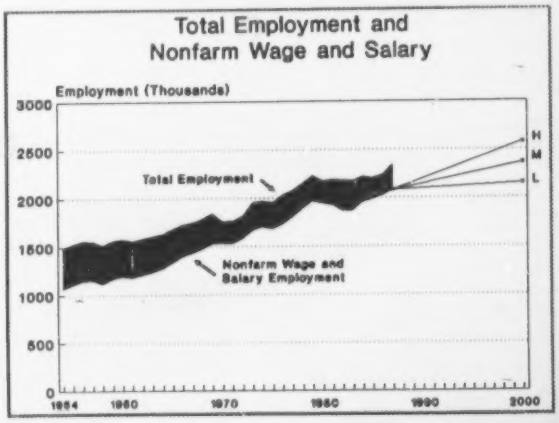
The **Labor Force** chart, above, includes everyone who is working or is actively looking for work, the employed and the unemployed. The labor force grew rapidly from the late 1960's until the early 1980's. This growth occurred due to the post war baby boom that began in the late 1940's, and to increasing numbers of women who looked for work and found jobs. The labor force is projected to grow much more slowly to the year 2000 because of lower birth rates that followed the baby boom. The growth will be a little slower than the trends of the 1950's.

Total employment includes everyone who is working for money, and it includes family members who work fifteen hours or more a week without pay in a family business. Unemployment includes those on temporary layoff expecting recall and everyone else who is not working and is actively looking for work. (See **Labor Force and Total Employment** chart above.) In the past, unemployment has increased because of decreases in employment,and because employment did not increase fast enough to absorb the rapidly growing labor force.



The **Nonfarm Wage and Salary** chart, above, includes everyone who works for someone and earns a wage or salary except for those who work on farms. Through monthly surveys of employers, and unemployment compensation





Source: DILHR Labor Market Information

tax records, we have reliable information on nonfarm wage and salary employment by industry. The mean (**M**) projection of nonfarm wage and salary employment growth will match the trends of the 1950's and early 1960's. Growth is not expected to be as rapid as the 1965 to 1979 period according to the high (**H**), mean (**M**), or low (**L**) projection.

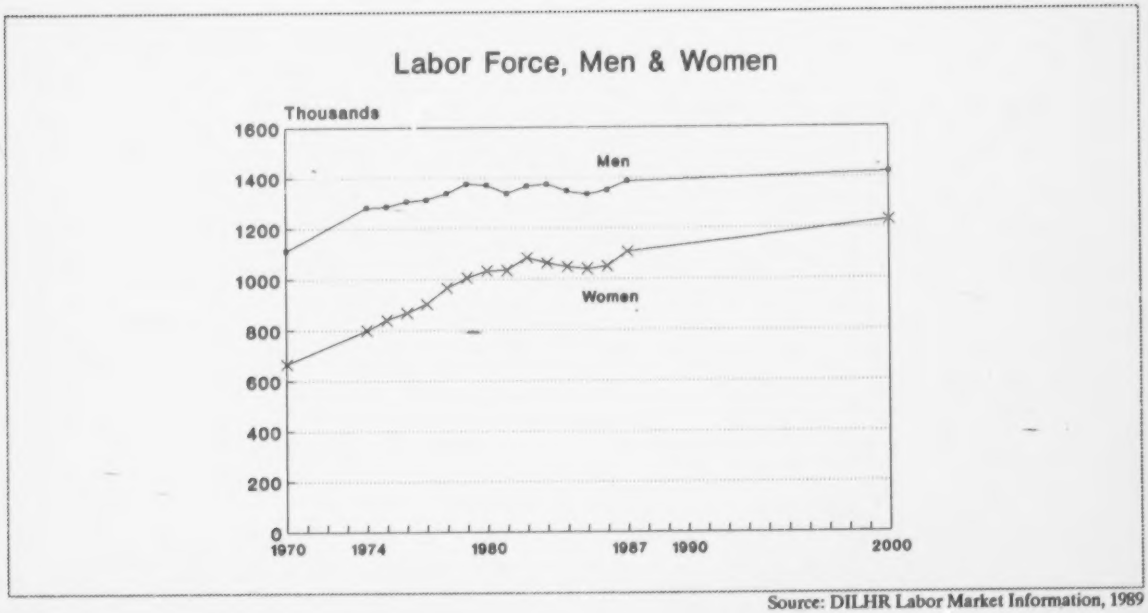
The difference between nonfarm wage and salary employment and total employment, shown in the **Total Employment and Nonfarm Wage and Salary** chart on the previous page, consists of farmers and people who work on farms, self employed workers, and unpaid workers in a family business. We do not have the series of reliable state estimates for this segment of the labor force that we would need in order to project their future employment.

We can, however, draw conclusions about Wisconsin total employment and unemployment based upon the separate projections of labor force and nonfarm wage and salary employment as shown in the "**Civilian Labor Force & Employment**" chart above. Projected total employment has to be between the projected labor force and the projected nonfarm wage and salary employment. Based upon the projected labor force and nonfarm wage and salary employment trends, it appears certain that the trend should be for unemployment to decrease.

These trends appear to indicate a return to a relation between labor supply and labor demand similar to the late 1950's and early 1960's. During that period there was a general concern about bottleneck occupations, those skilled occupations in short supply that might slow down business expansion. It was not unusual for an employer to call Job Service and say, "If you can send me a machinist, I will also hire three helpers."

As a result of these trends, a skilled labor force will become more important for industrial development. Employers will increase efforts to improve productivity because it will not be as easy to add employees and there will be more opportunity to train disadvantaged people for employment. While these trends will at times be overshadowed by the business cycle, they offer a potential for achieving full employment.

Labor Force by Sex



Source: DILHR Labor Market Information, 1989

The chart, **Labor Force, Men & Women**, uses data from the 1970 and 1980 Census, the Bureau of Labor Statistics, *Geographic Profile of Employment and Unemployment*, for 1974 - 1979 and 1981 - 1987, and our projection to the year 2000, to show an increase in the labor force.

The labor force consists of all civilian men and women sixteen years of age or over who are either working, looking for work, or expecting recall to their last job. The size of the labor force changes either when the number of people over sixteen years old changes or when the "labor force participation rate" changes. The labor force participation rate is the percentage of people over sixteen years old who work or are looking for work; that is, the proportion who are in the labor force.

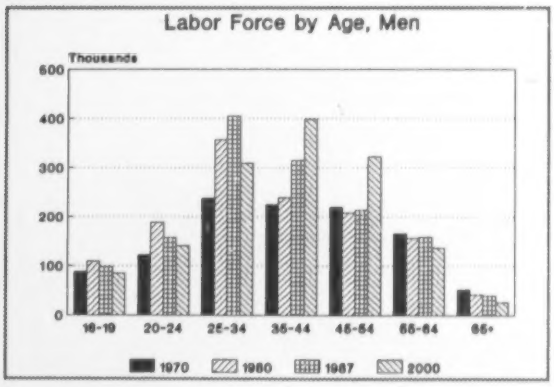
Based upon population estimates provided by the Wisconsin Department of Administration, Demographic Service Center, the size of the population 16 years of age and over has increased, and will continue to increase to the year 2000. There is a trend toward lower participation rates for men, primarily due to earlier retirement, and a greater trend toward increasing participation rates for women. (Further discussion of these trends can be found in the Methodology.)

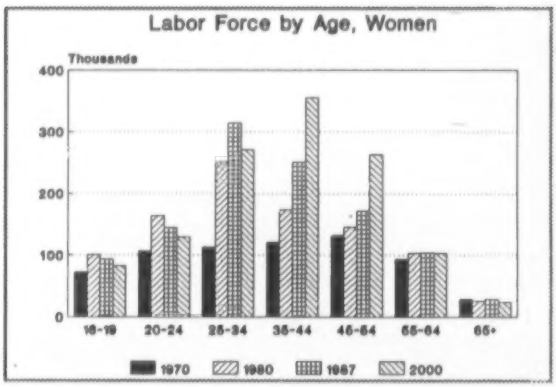
As a result of these trends, we project that there will be an increase in the number of men in the labor force to the year 2000, but this increase will be much slower than the growth that occurred in the 1970's. The growth in the number of women in the labor force will also be slower than the growth of the 1970's. But, the growth of the number of women in the labor force will continue to be greater than the growth in the number of men.

Between now and the year 2000 we expect that four women will be added to the labor force for every man added to the labor force. The total number of women in the labor force will grow closer to the total number of men in the labor force.

One obvious conclusion is that with the slower growth of men in the labor force, it will be important to encourage women to enter jobs that have been traditionally held by men, and to take training in fields such as mathematics and engineering which in the past have been male dominated.

Labor Force by Age





For our purposes, the term "labor force" means the civilian labor force because it excludes the armed forces. The percentage of the population that is in the labor force, the labor force participation rate, varies by age. Fewer young people are in the labor force because many are in school, and others are in the armed forces. Fewer older people are in the labor force because many are retired.

The birth rate soared after World War II, reaching a peak in about 1965, and causing the "baby boom." The aging of this baby boom population can be seen in the charts of **Labor Force by Age, Men** and **Labor Force by Age, Women**. The number of 20 to 24 year olds peaked in about 1980. The number of 25 to 35 year olds is currently near its peak.

The number of men and women in the labor force who are less than 35 years old will decline by the year 2000. The decline in the number under 25 years old has started already. In many geographic areas this is now causing problems in recruiting for jobs normally held by teenagers. Unless a higher proportion of people under 35 obtain the skills that employers will need, this traditional source of workers with the latest skills will grow smaller.

By the year 2000 there will be a much larger number of people 35 to 54 years old in the labor force. Consider the likely implications of this in terms of the reputation for stability, reliability, productivity, and leadership of this age group. "Mid-life crises", and the greater difficulty these workers face when they become "dislocated" from their former employment could become bigger issues. There will be a great opportunity to train these workers to augment the potentially smaller number of trained younger workers.

In 1970 there were fewer women in the labor force ages 25 to 34 than there were ages 45 to 54. Currently the peak number of women in the labor force is in the 25 to 34 year old age group because of the baby boom, and because more of the women in this age group are working. It is expected that more women in the 25 to 34 year age group deciding to work now will translate into more women in the 35 to 44 age group, and in the 45 to 54 age group, deciding to work in the year 2000.

The projection that there will be a net growth of four women added to the labor force between now and the year 2000 for every man added to the labor force does not mean that there will be more young women entering the labor force than young men. This projected difference in growth is due partially to the much larger number of men than women who will retire. The projected difference is also due to the expected increasing share of women over 35 years old who will work.

One could probably conclude that if we are going to develop a more highly skilled work force, we are going to have to provide more training for adult workers.

Industry Employment Trends

The following pages describe past and projected trends in employment by industry. The industries are divided into goods producing and service producing industries. The goods producing and service producing industries are listed by broad Standard Industrial Classifications. These are classifications of industries in accordance to the product or service produced using a standard coding structure established by the U.S. Office of Management and Budget.

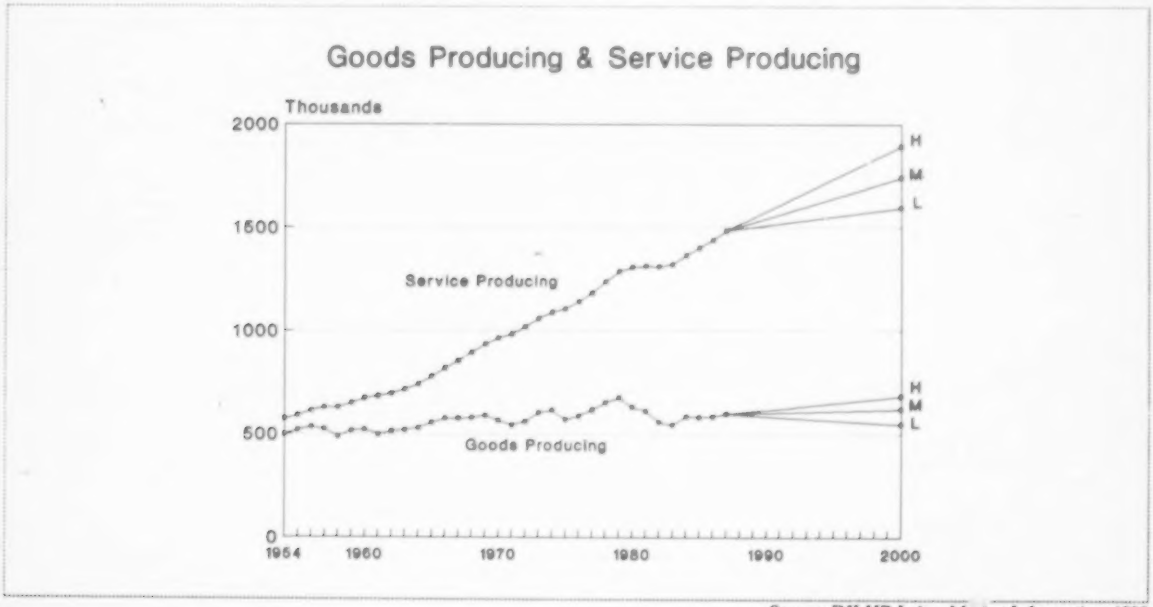
The goods producing industries in order of their Standard Industrial Classifications are agriculture, forestry and fishing; mining; construction; and manufacturing. This report does not include agriculture, forestry, and fishing because accurate current estimates of total employment for this industry are not available for Wisconsin. Manufacturing is divided into durable and nondurable industry groups. The major manufacturing industries are discussed in order of their Standard Industrial Classifications within the durable and nondurable groups.

The service producing industries are, in order of their Standard Industrial Classifications, transportation, communication, and public utilities; trade; finance, insurance, and real estate; services; and government. In the future we would like to provide more detail concerning these service producing industries, but to do so we will have to compile a more detailed history of employment trends.

Three projections are shown for each industry. One, marked **M** on the graphs, is the average or mean of the projections of employment growth for that industry. This can be considered as the most probable future trend, and it is the projection that we will use in preparing occupational projections.

The high projection is the average of the three highest projections made by a panel of analysts. The low projection is the average of the three lowest projections made by a panel of analysts. (For more information about these projections see the methodology section.) The spread between the high and the low projection give you some idea of the uncertainty that surrounds the mean projection. Either the high or the low projection could occur; but, we recommend that you use the mean projection for your planning. (Tables showing annual average employment and projections are included in the appendix.)

Goods Producing and Service Producing



Source: DILHR Labor Market Information, 1989

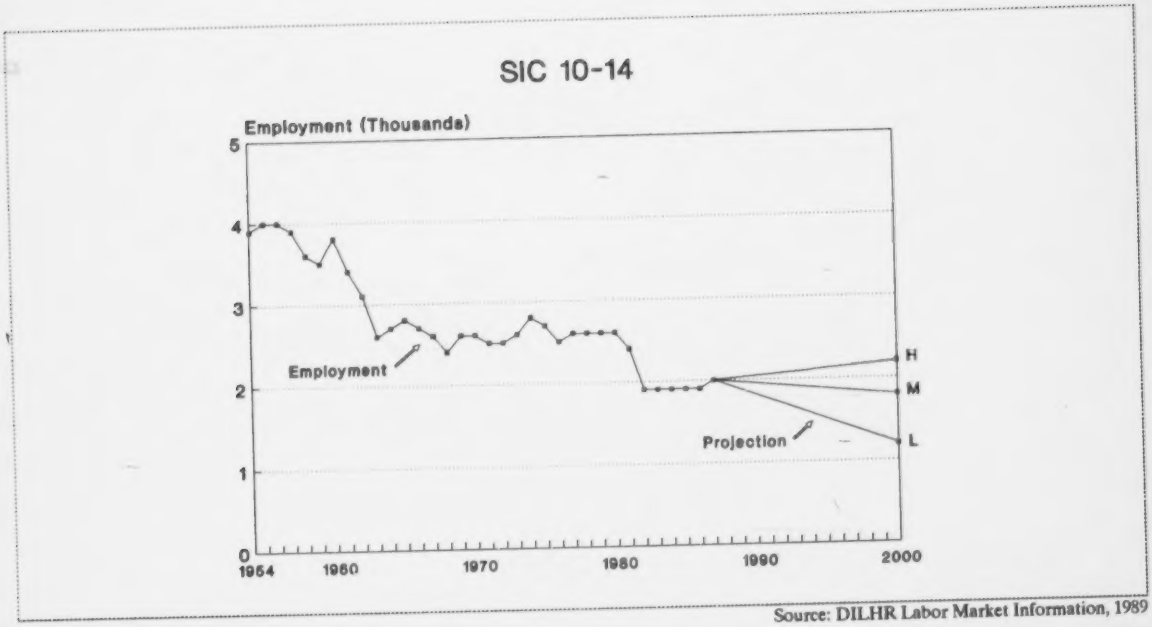
Industries are often divided into goods producing industries and service producing industries. The goods producing industries are mining, construction, and manufacturing. (Farming is also considered a goods producing industry, but was not included in this study.) The service producing industries are transportation, communication and utilities; wholesale and retail trade; finance, insurance and real estate; services; and government.

The total value of goods produced has grown tremendously; but, as shown by the chart, there has been very little growth in employment in the goods producing industries. It should come as no surprise then that the projection is for only gradual small growth in goods producing employment.

Employment in the service producing industry has been growing much faster than employment growth in the goods producing industry since the data became available in 1954. Employment growth in the service producing industries stays closer to the growth trend because the service producing industries are not as affected by business cycles. Employment in the service producing industries is expected to grow a little slower than the very rapid growth of the 1970's.

As indicated by the high and low projections, analysts have reasons to project that employment will grow faster or slower than the average, or mean, projection. There is no disagreement, however, about the general trend of little growth in goods producing employment and much more growth in service producing employment.

Mining



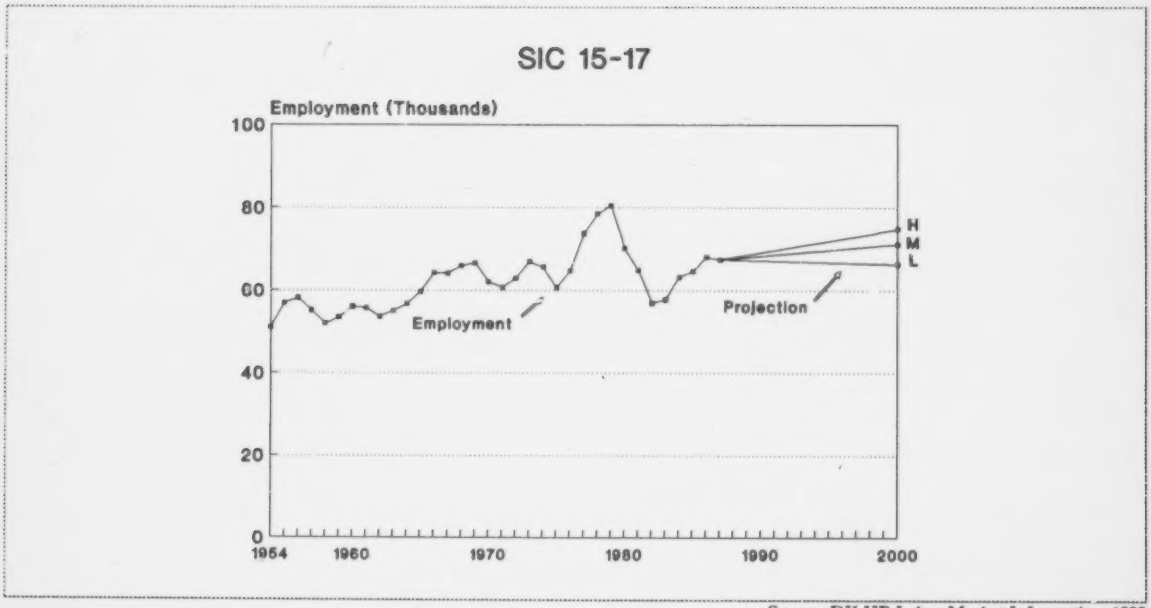
Source: DILHR Labor Market Information, 1989

Mining belongs in the Standard Industrial Classification, SIC, codes 10 through 14. These SIC codes are used to insure standard national definitions for statistical reporting and analysis. These codes, like the name "mining", identify the kinds of goods or services produced. They are reported here out of tradition, and for those analysts who are used to working with them.

The mining industry in Wisconsin is made up, for the most part, of sand and gravel pits.

Mining is one of Wisconsin's smaller goods producing industries. Employment dropped rapidly from about 3,800 in 1960 to 2,600 in 1963. Employment then remained fairly level until the sharp drop from 2,600 in 1980 to 1,900 in 1982. Since 1982 employment has remained fairly level, and the projection is for a slight decline. The median projection for the year 2000 is employment of 1,800, with a high projection of 2,200 and a low of 1,200.

Construction



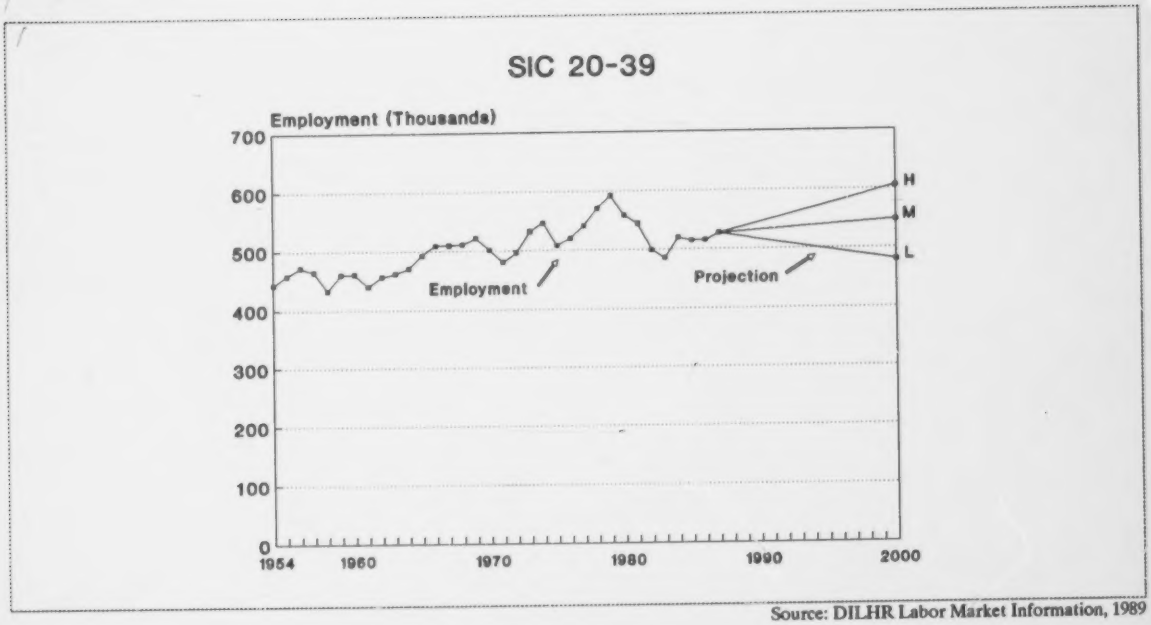
Source: DILHR Labor Market Information, 1989

The construction industry includes Standard Industrial Classification groups 15, building construction, general contractors; 16, highway and other heavy construction, general contractors; and 17, construction, special trade contractors such as plumbers, painters, electricians, masons, carpenters, and roofers.

Employment in construction varies depending upon economic conditions and major construction projects. Employment grew from 51,000 in 1954 to a peak of 66,600 in 1969. After the following business recession, there was another peak of 66,900 in 1973. After the 1975 recession, construction employment rose rapidly to 80,500 in 1979 before plunging to 56,900 in 1982. By 1987 construction employment was back up to 67,400.

The projected trend is for continued growth in construction employment to 71,100 in the year 2000. The high projection is 74,800 and the low projection is 66,300. Efficiency improvements are expected to make it possible for the value of construction to grow faster than the growth in construction employment.

Manufacturing



Source: DILHR Labor Market Information, 1989

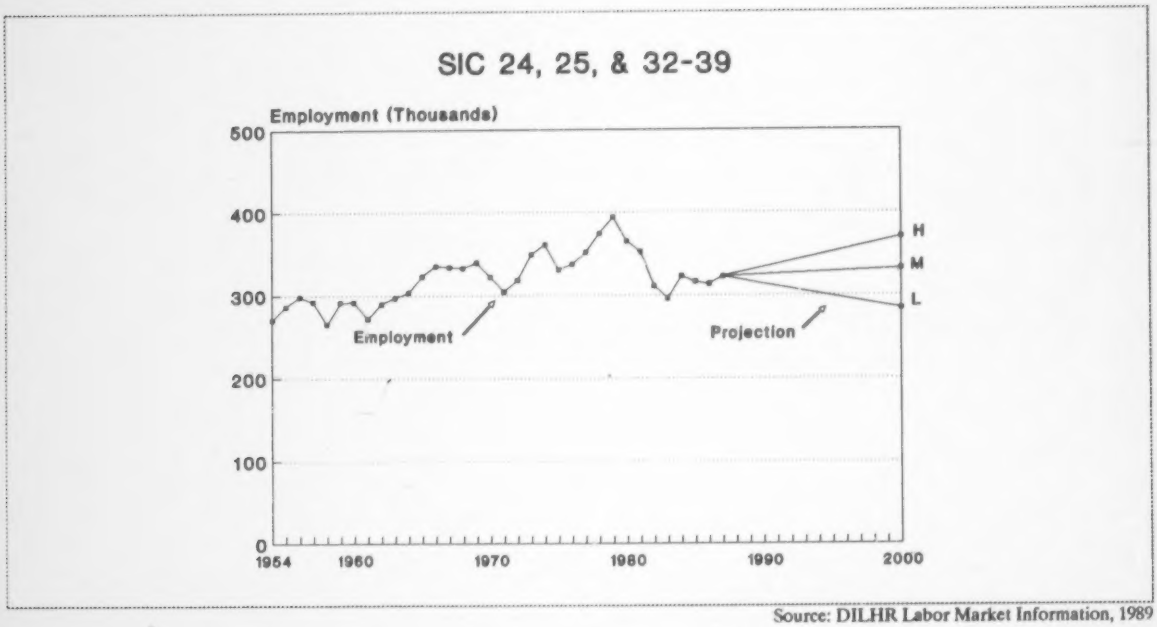
Wisconsin is a manufacturing state. We rank seventh among all states in the proportion of total state employment that is in manufacturing. One out of every five Wisconsin workers is employed in manufacturing.

Between 1960 and 1979 the annual average manufacturing employment grew from 460,400 to 591,300. The United States economy was growing, and Wisconsin was reported as "the star of the snow belt." Some state actions that may have helped this growth included the elimination of the machinery and equipment tax and the fact that our Unemployment Compensation fund remained solvent through the 1975 recession unlike most midwest states.

During the recession, 1980-1983, the high value of the dollar, and increased foreign competition, caused manufacturing employment to drop to 484,100 by 1983.

Very small growth is projected for manufacturing from an average of 526,400 in 1987 to an annual average of 547,100 employees by the year 2000. The range of projections indicates considerable uncertainty. The high projections show a potential employment of 605,000, which would be above the 1979 peak. The low projection of 478,900 assumes a loss of employment due primarily to automation, and not to a decrease in production.

Durable Goods Manufacturing



Source: DILHR Labor Market Information, 1989

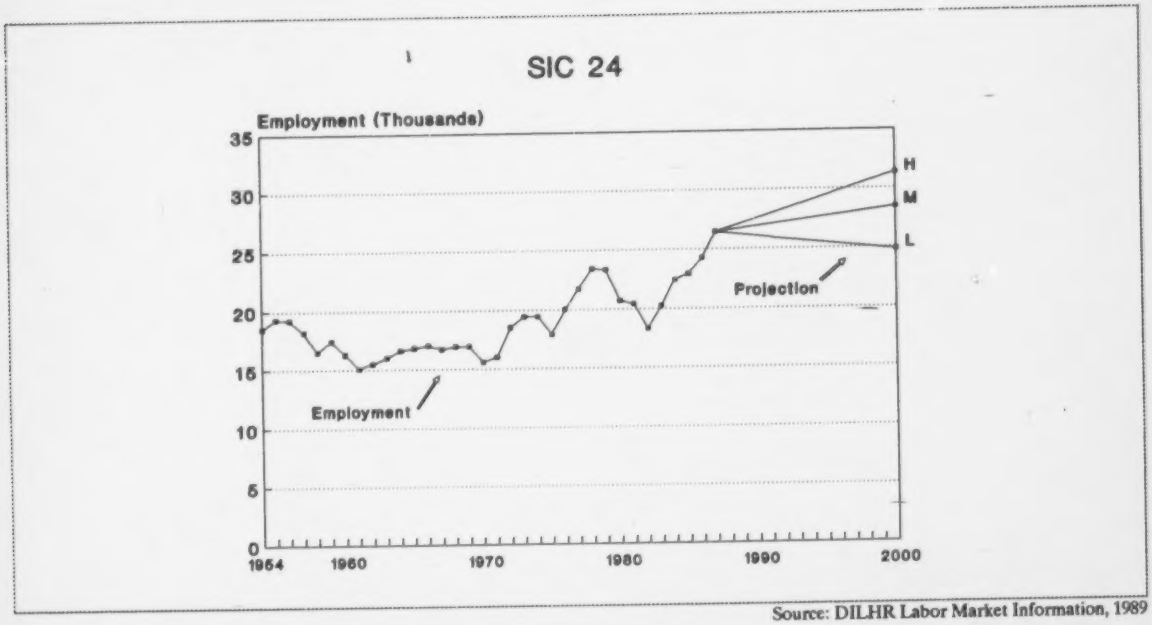
Manufacturing is normally divided into durable and nondurable goods producing industries.

Durable goods producing industries are those that produce metals and machinery for other industries, appliances and furniture for homes and offices, automobiles, and other items with a long product life. Purchases of durable goods can usually be postponed during a recession, and businesses reduce investments in machinery and equipment when business prospects do not look good. Employment in durable goods manufacturing varies with the business cycle.

Wisconsin durable goods manufacturing grew from less that 300,000 in 1954 to almost 400,000 in 1979, with several recessions and peaks in between. Then durable manufacturing employment dropped steeply to about 300,000 during the recession before its present rebound. The median projection indicates very little growth in durable goods employment. Increases in production would be achieved primarily through increases in productivity.

The high and low projections indicate a considerable range of possibilities from a growth to 369,800, or just a little below the 1979 peak, to a decline to 283,900 which was about the average employment in the late 1950's.

Lumber and Wood Products



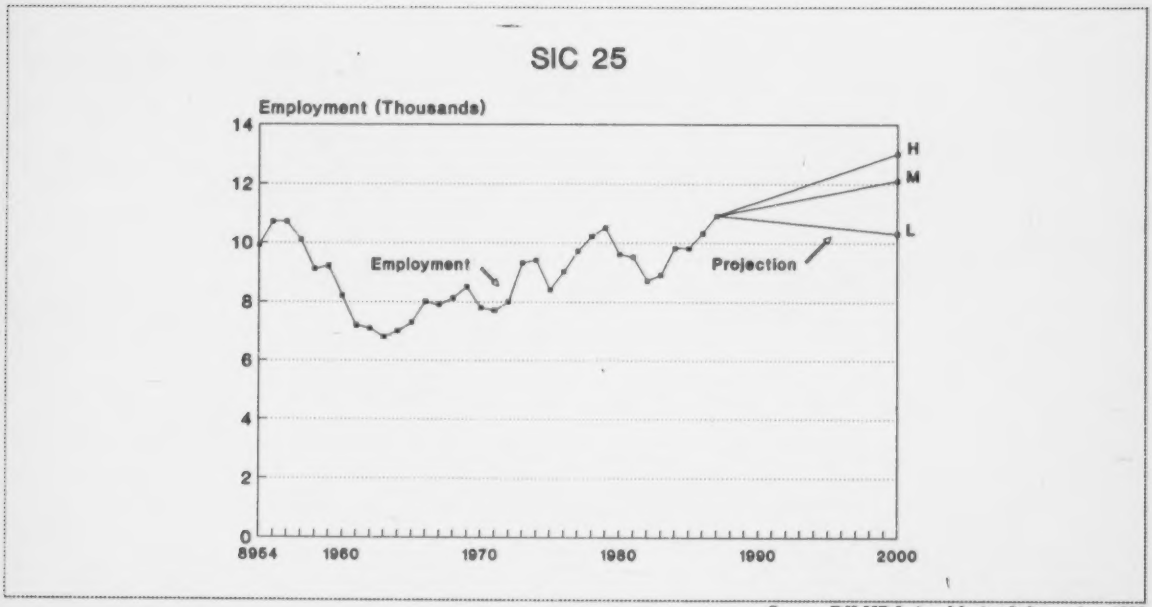
Source: DILHR Labor Market Information, 1989

Lumber and Wood Products, Standard Industrial Classification 24, includes logging contractors; sawmills; millwork, veneer, and plywood; wood containers; prefabricated wood buildings and mobile homes; and miscellaneous wood products. Wisconsin's forests provide raw materials needed in this durable manufacturing industry.

Employment in lumber and wood products depends to a great extent on building trends in the housing industry.

Employment in 1987 averaged 26,400, the largest employment ever for this industry in Wisconsin. The average projection is a trend of continued growth to 28,400 by the year 2000. The high projection to 31,300 depends upon the increased earnings of people in the 35-54 age groups and their ability to afford homes and the associated wood products. The low projection with a decrease to 24,800 is based upon assumptions of automation, the slower population growth, and the trend showing up on the east and west coast to increased housing costs.

Furniture and Fixtures



Source: DILHR Labor Market Information, 1989

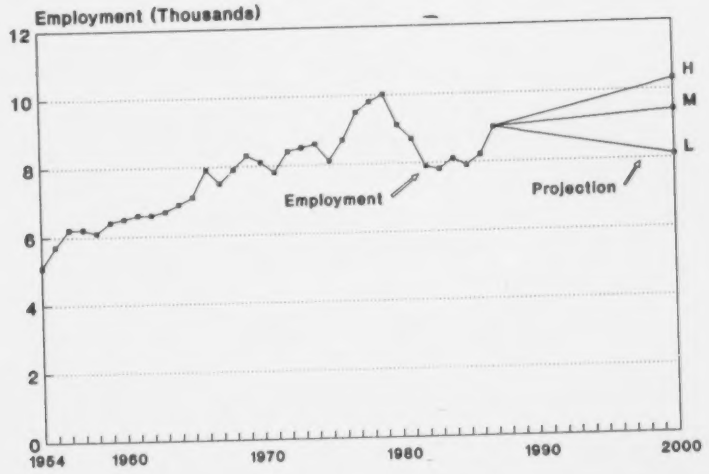
The Furniture and Fixtures industry, Standard Industrial Classification 25, includes household and office furniture; partitions, shelving, and store fixtures; and miscellaneous furniture and fixtures. Employment depends upon the building and remodelling of offices and stores as well as home construction.

Employment in this industry in Wisconsin was at a peak in 1955 and 1956 with 10,700 employed. This industry was hit hard by the slump in building that occurred around 1960, declining to 6,800 employed by 1963. Since then, the periodic business cycles have not stopped the steady upward trend to a new record employment of 10,900 in 1987.

The middle projection to the year 2000 is a continued growth trend to an employment of 12,100. The high projection is of growth to 13,000 employed. The low projection is influenced by the possibility that we may have over built offices and stores, and shows a very small downward trend to 10,300 by the year 2000.

Stone, Clay, Glass, And Concrete

SIC 32



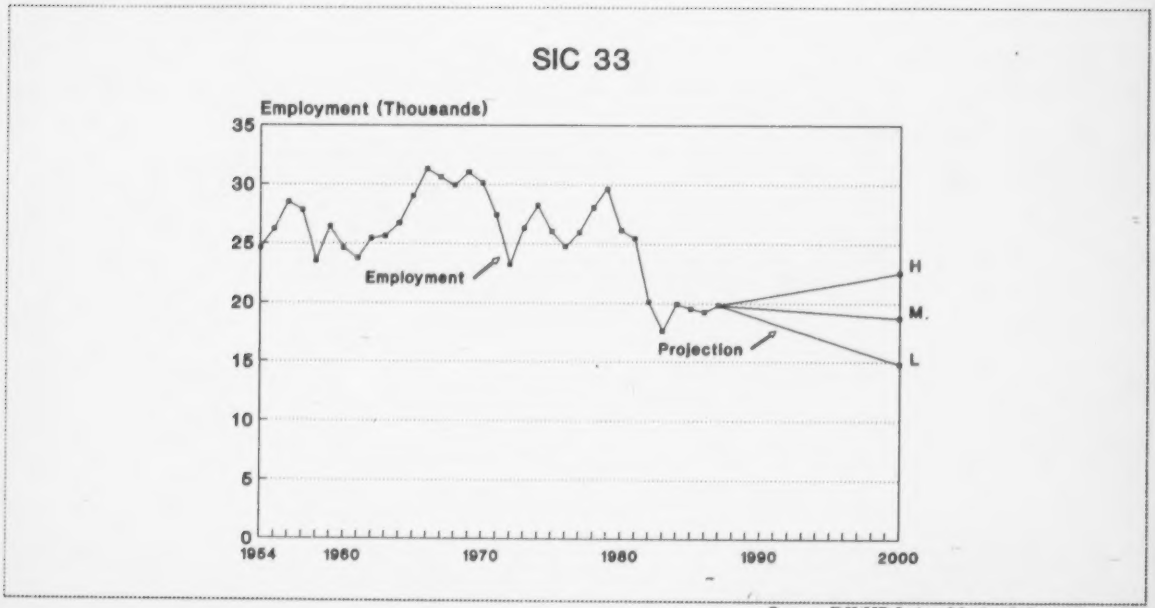
Source: DILHR Labor Market Information, 1989

Stone, Clay, Glass, and Concrete Products, Standard Industrial Classification 32, includes window glass, glass containers, and other products made of glass; clay ceramics, brick, and pottery; concrete, gypsum, and plaster products; cut stone products; and asbestos and abrasive products.

Employment almost doubled between 1954 to 1979, with a growth from 5,100 employed to 10,000 employed by 1979. The recession caused a sharp drop to 7,800 in 1983. With the recovery from the recession, employment grew to an annual average of 9,000 in 1987.

The average projection shows a growth to 9,400 by the year 2000. The optimistic, High, projection is for a growth to 10,300, a little more than the 1979 peak, by the year 2000. The pessimistic, Low, projection is for a decrease in employment to 8,100, which would be a return to 1984 levels of employment, but with higher levels of production due to increases in productivity.

Primary Metal Industries



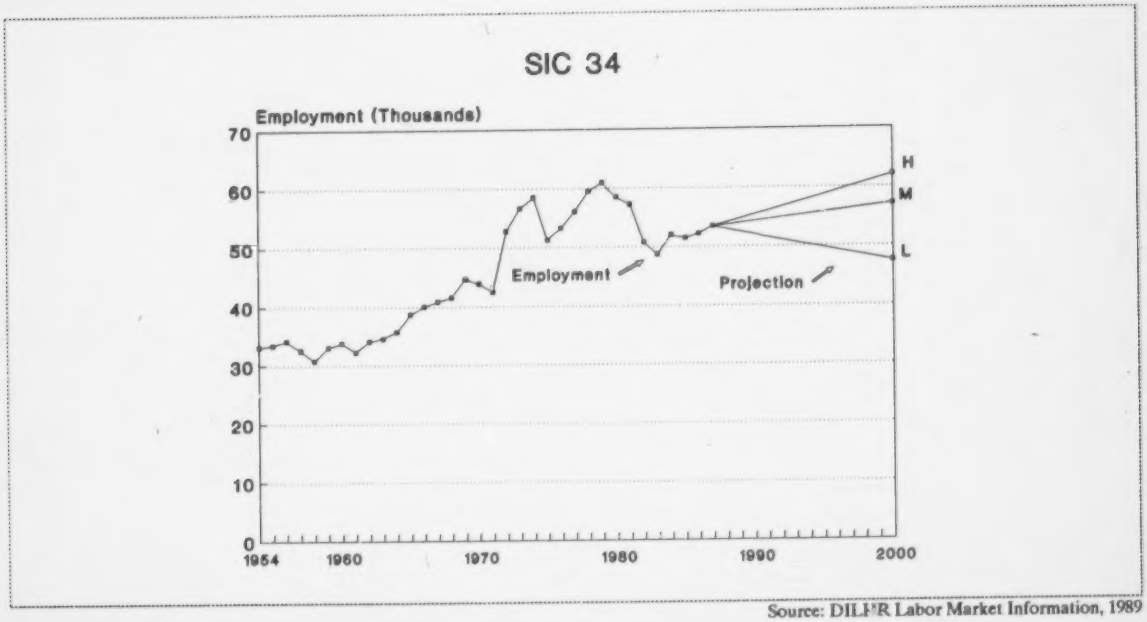
Source: DILHR Labor Market Information, 1989

The Primary Metal Industries, SIC 33, include foundries to make iron and steel and other metals, heat treating to give the metals desired properties, and rolling and extruding to shape the metal into sheets, bars, rods, pipe, or wire. Results of this production are used in other manufacturing, however there has been some replacement of these products by plastics.

Employment in primary metal industries grew from 24,600 in 1954 to a peak of 31,300 in 1966. Despite general economic growth, employment was a little lower, 29,600, when durable manufacturing employment peaked in 1979. The sharp drop to 17,600 in 1983 was a result of the recession, international competition, the value of the dollar, automation increasing productivity, and continued trends to plastics.

The average, and most likely projection, is for a slight downward trend to 18,700 employed by the year 2000. The high projection is a growth to 22,500. The low projection with a decrease to 14,800 could represent a continued loss to competition as well as the shift to other materials, or it could represent modernization of plants through automation.

Fabricated Metal Products



Source: DILHR Labor Market Information, 1989

Fabricated Metal Products, SIC 34, includes products such as metal cans, hand tools, cutlery, general hardware, nonelectric heating equipment, fabricated structural metal products, screw machine products, metal forgings and stampings, and ordinance. This is one of Wisconsin's larger industries.

Employment growth was rapid from 32,300 employees in 1961 to 58,400 employees in 1974. The 1975 recession saw employment drop to 51,200 but by the peak in 1979 employment had reached 60,900; almost double the employment of eighteen years earlier.

The average projection, **M**, is for a growing trend to 57,100 employees by the year 2000. The high projection to 62,000 in the year 2000, a little above the 1979 peak, would mean a considerable increase in production and probably would depend upon creation of new products. The low projection of 47,400 represents a loss of employment which could occur due to increases in productivity even with some increase in production.

Nonelectrical Machinery

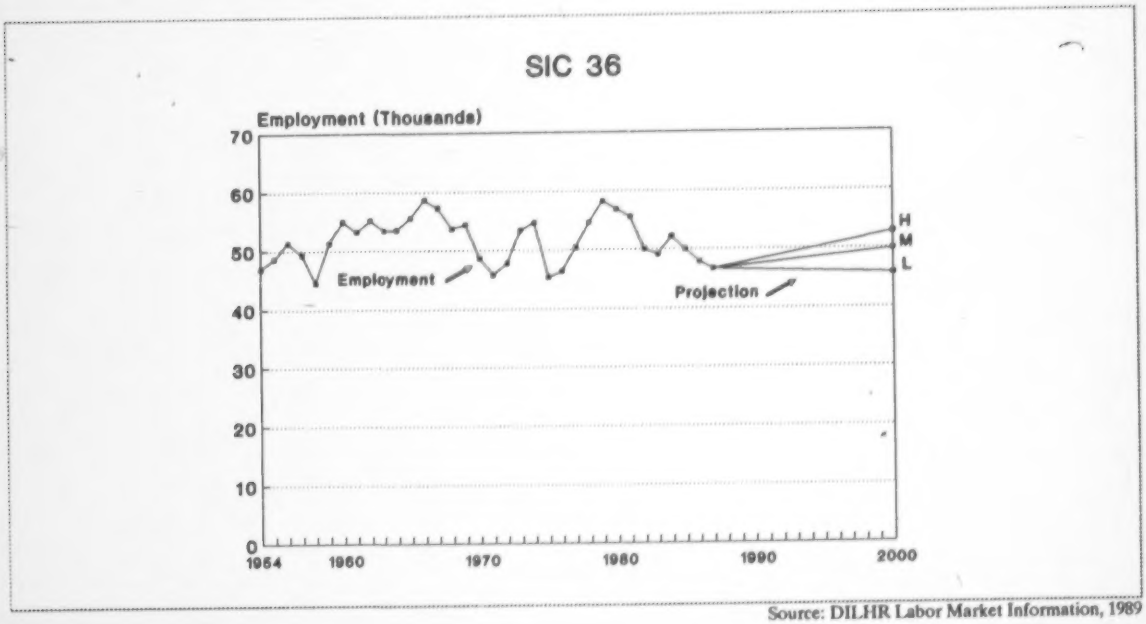
Source: DILHR Labor Market Information, 1989

Nonelectrical machinery , SIC 35, is Wisconsin's largest manufacturing industry. It includes manufacture of machinery and equipment, including electrical machinery, but excluding electrical equipment and transportation equipment. Portable electric tools are included. Major nonelectrical machinery industries in Wisconsin include engines and turbines, farm equipment, and metal working machinery.

Employment in this industry varies considerably depending upon the business cycle because much of the machinery produced in Wisconsin is used in business. From a low employment of 82,000 in 1961, employment grew to 134,500 in 1979, an increase of over 50,000 workers. During the recession, 1980-1983, foreign competition and the high value of the dollar caused a drop to 92,700 employees. Since then, employment has rebounded to 102,000 in 1987. In the face of tough competition to regain markets lost, Wisconsin employers are increasing both quality of products and productivity.

The mean projection indicates a trend upward to 106,800 by the year 2000. The high projection is to 117,200 by the year 2000. The low projection indicates a possible loss in employment to 93,600 employees by the year 2000.

Electrical And Electronic Equipment

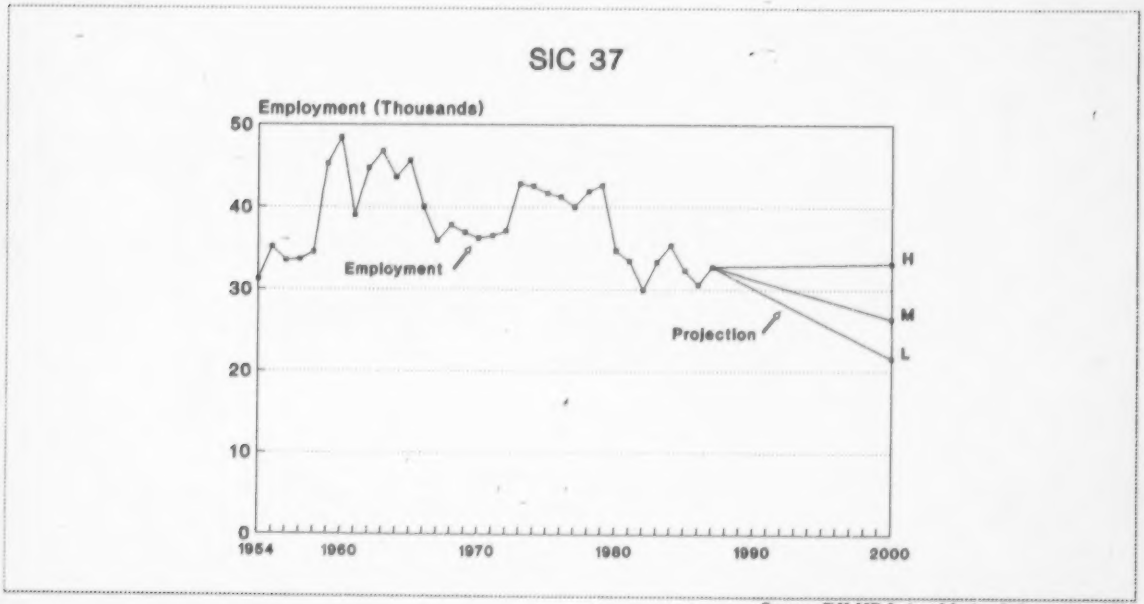


Source: DILHR Labor Market Information, 1989

The Electrical and Electronic Machinery, Equipment and Supplies manufacturing industry, SIC 36, manufactures electrical transmission and distribution equipment; electrical motors and generators; industrial controls; electric welding apparatus; household appliances, electric lighting and wiring; radio, television, and communication equipment; and computers. It is one of Wisconsin's' largest industries.

The volatility of the employment in this industry makes it difficult to discern any trends in employment patterns. Employment was 46,900 in 1954 and almost the same, 46,600, in 1987. The middle projection, the mean, is for growth to 49,800 by the year 2000. This would be a growth to about the average employment over the 1954 to 1987 period. The high projection is to 52,700, above the average for the period. The low projection to 45,700 represents a possible new low level of employment.

Transportation Equipment Manufacturing



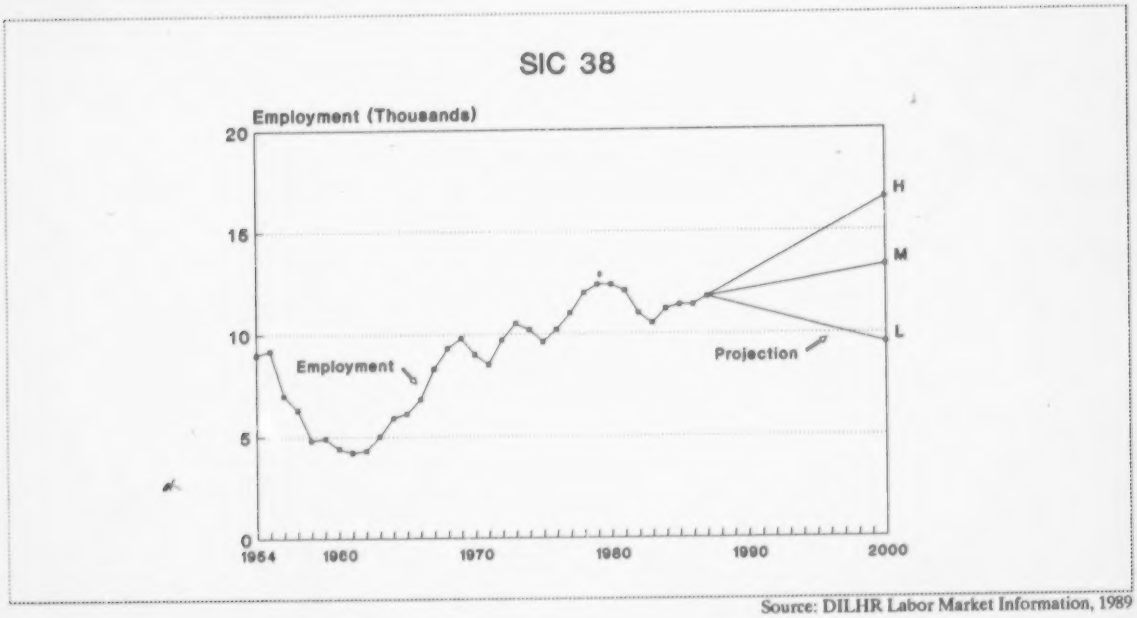
Source: DILHR Labor Market Information, 1989

Transportation Equipment manufacturing, Standard Industrial Classification 37, includes motor vehicles and motor vehicle equipment; aircraft and aircraft parts; ship and boat building and repair; railroad equipment; motorcycles, bicycles and parts; and travel trailers and campers.

Employment in this industry in Wisconsin peaked at 48,400 in 1960. Employment in the industry varies considerably during business cycles because purchases of transportation equipment can usually be postponed during a recession. There has been considerable pressure from foreign competition towards automation to improve both productivity and quality. Annual average employment was 32,700 in 1987.

With Chrysler's departure, the mean projection indicates decreased employment to 26,400 by the year 2000. The high projection of 33,100 in the year 2000 could be attained with growth in the industry resulting from new transportation technology or new businesses relocating to Wisconsin. The low projection of 21,600 is in part based upon an assumption of further automation which could increase the value of the equipment produced while reducing employment.

Instruments and Related Products



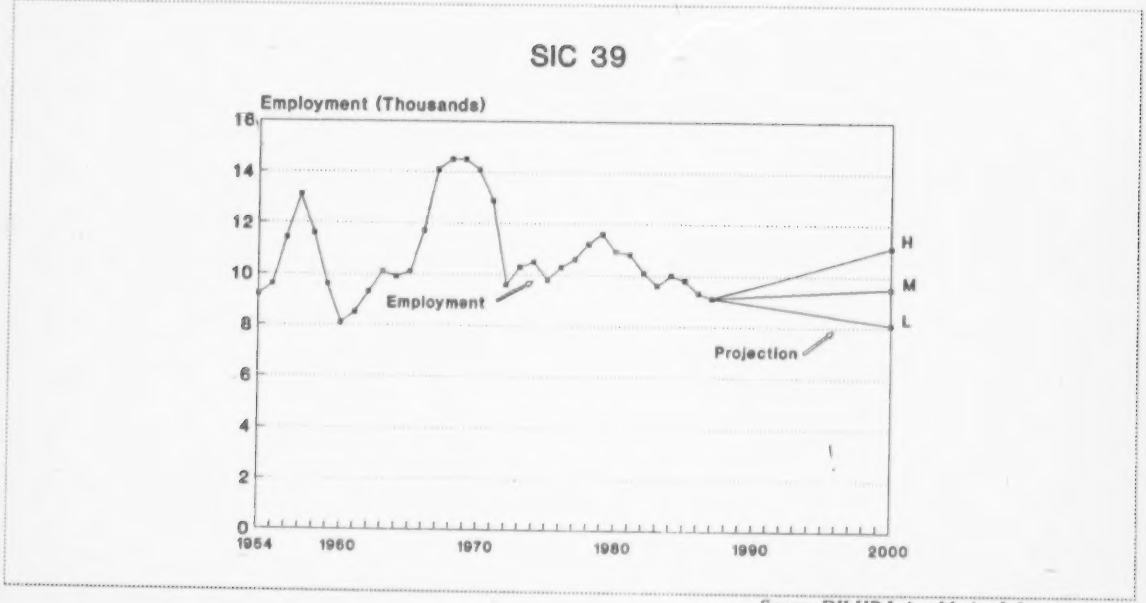
Source: DILHR Labor Market Information, 1989

Instrument and Related Products manufacturing, SIC 38, includes engineering, laboratory, scientific, and research instruments and related equipment; measuring and controlling instruments for home and industry; optical instruments and lenses; surgical, medical, and dental instruments and supplies; photographic equipment and supplies; and watches and clocks.

This is a small but growing industry in Wisconsin. In the 1950's and early 1960's employment dropped by more than fifty percent, from 9,000 in 1954 to 4,200 in 1961. Since then, however, the employment trend has been upward. By 1980 employment had almost tripled to 12,400. While affected by the recession, employment was back up to 11,800 in 1987.

The average projection is for continuation of the growth trend to 13,300 employees by the year 2000. The high projection of 16,600 in the year 2000 could occur if new technology increases the demand for instruments produced in Wisconsin. The low projection to 9,500 could occur either through automating the production of instruments or through loss of business to world competition.

Miscellaneous Manufacturing



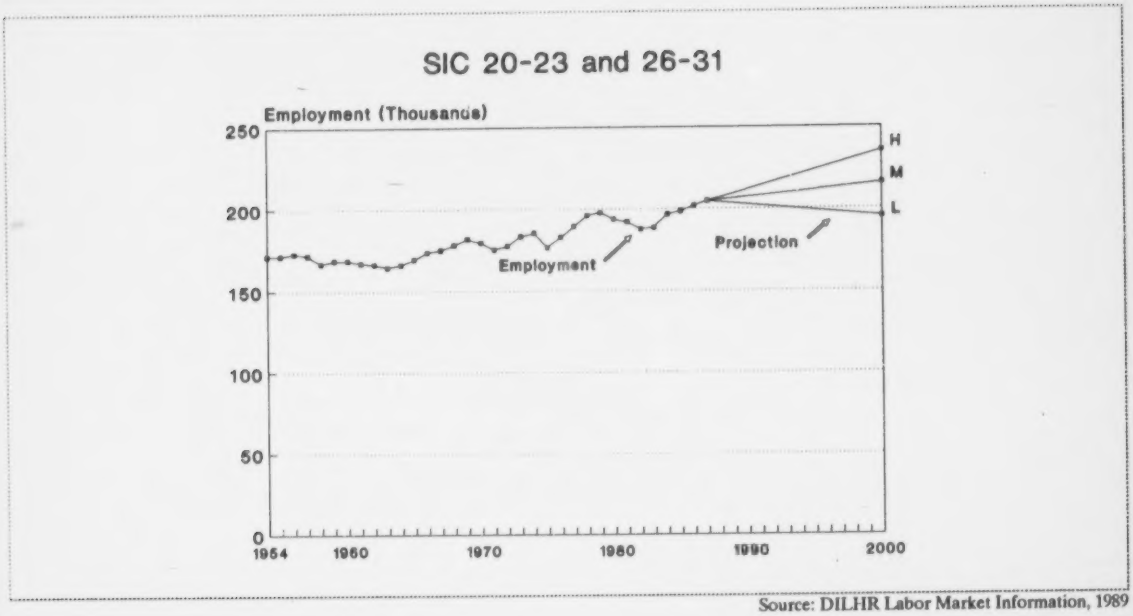
Source: DILHR Labor Market Information, 1989

Miscellaneous Manufacturing industries, SIC 39, include manufacturers of jewelry, silverware, toys, sporting goods, pens and pencils, buttons and costume novelties, needles and pins, brooms and brushes, signs and advertising displays, burial caskets, linoleum, and miscellaneous items not classified elsewhere.

Prior to 1975, employment for ordinance production was also included in this industry. The only comparable data for projection purposes is from the employment of 9,800 in 1975 to the employment of 9,100 in 1987.

The mean projection indicates very little growth to 9,500 in the year 2000. The high projection of 11,100 would indicate a return to near the peak of 11,600 that occurred in 1979. The low projection of 8,100 in the year 2000 would represent a return to the 1960 level of employment, but the value of the goods produced would be far greater in the year 2000 due to productivity increases.

Nondurable Goods Manufacturing



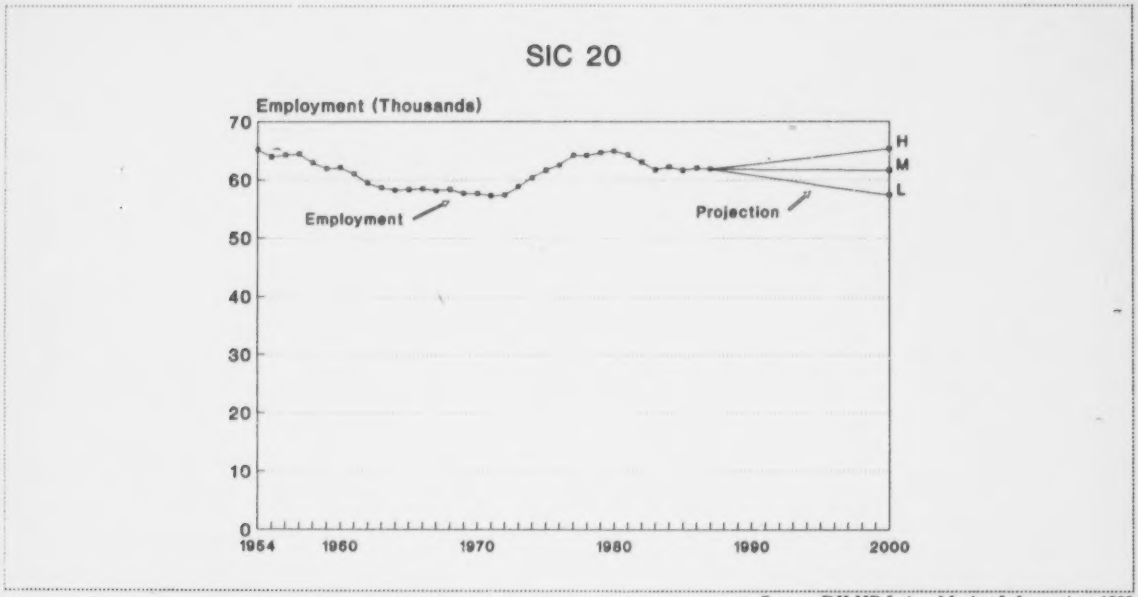
Source: DILHR Labor Market Information, 1989

Nondurable goods include food, clothing, paper, printing, chemicals, rubber and plastics products, and leather products--goods that are consumed and have a shorter product life. Because purchase of nondurable goods are difficult to postpone even during recessions, employment in nondurable goods manufacturing is not as affected by the business cycle as employment in durable goods manufacturing.

The trend of employment in nondurable goods manufacturing in Wisconsin has been upward since the low of 164,500 in 1963. The annual average employment of 204,600 in 1987 represents was the highest ever for this industry.

The mean projection to the year 2000 of 215,600 indicates continued growth. The high projection to 235,200 employees would require growth faster than the 1965 to 1989 trend. The low projection to 195,000 employees would require reversal of the growth trend and a decline in nondurable manufacturing employment.

Food and Kindred Products



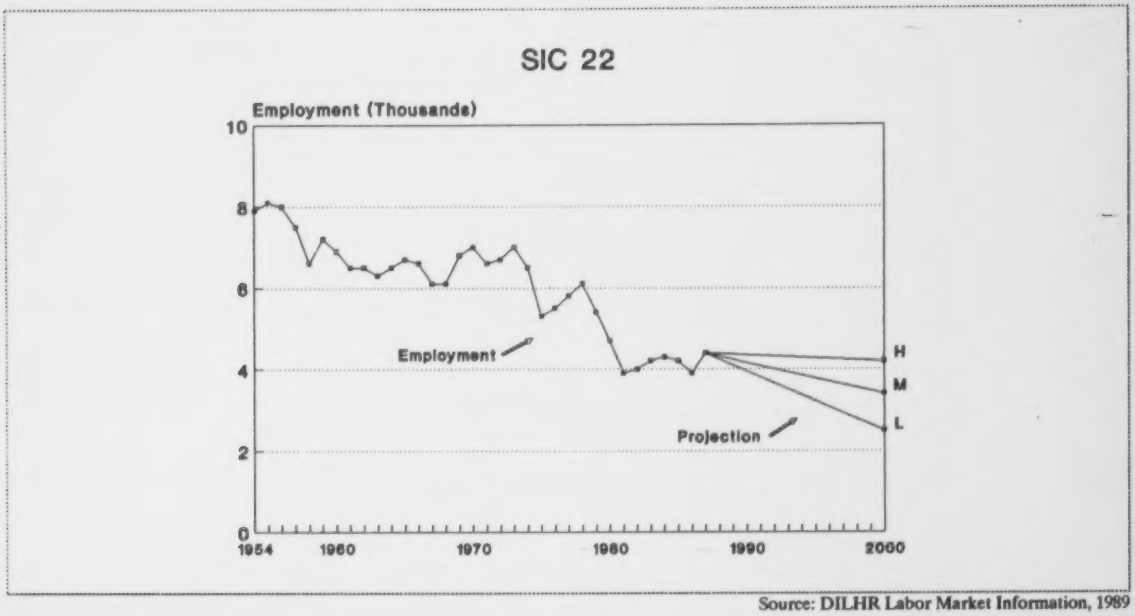
Source: DILHR Labor Market Information, 1989

Food and Kindred Products manufacturing, SIC 20, includes processing of food and beverages; manufacturing related products such as ice, chewing gum, and vegetable and animal fats and oils; and manufacture of feeds for animals and fowls. This is Wisconsin's largest nondurable manufacturing industry.

Employment in this industry declined from 65,100 in 1954 to 57,200 in 1971. It returned to 64,900 in 1981, then decreased to 61,700 in 1983. There has been little change in employment since 1983. The trend line indicates practically no change in employment.

The mean projection indicates little change with employment of 61,600 in the year 2000. The movement of packing facilities closer to the growth of consumers in the south and west, and reduced consumption of meats and products heavy in butterfat could cause a decrease in employment to the low projection of 57,300 in the year 2000. New food products and improved marketing could cause an increase in employment to the projected high of 65,300 by the year 2000.

Textile Mill Products



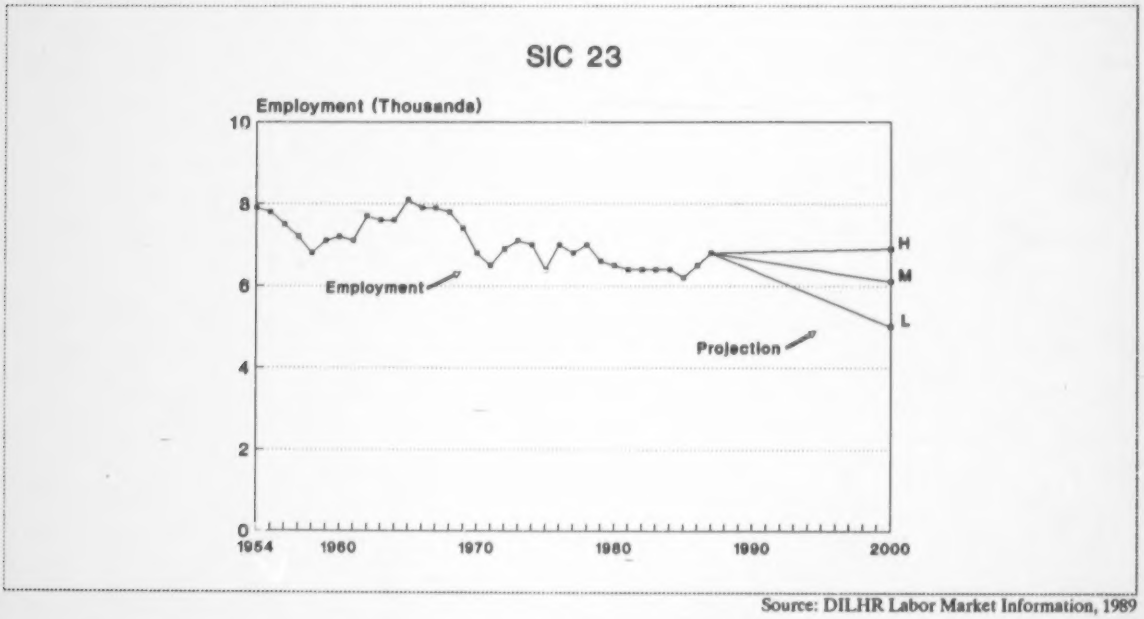
Source: DILHR Labor Market Information, 1989

Textile Mill Products, SIC 22, includes preparation of fiber and manufacture of yarn and threads; production of fabrics and carpets; dyeing, waterproofing, or otherwise treating fabric; and manufacture of felt goods and miscellaneous textiles. The major sector of the textile industry in Wisconsin is in knitting mills.

The peak employment in this industry in Wisconsin was 8,100 in 1954. The trend since then has been declining employment. The low of 3,900 occurred in both 1981 and in 1986. Initially cheaper labor in the south, and more recently cheaper labor in other countries contributed to the decline of textile mill manufacturing employment in Wisconsin.

The average projection is for a continued small decline to 3,400 employees in the year 2000. The low is a decline to 2,500. The high projection indicates little change with employment of 4,200 in the year 2000.

Apparel and Other Textile Products



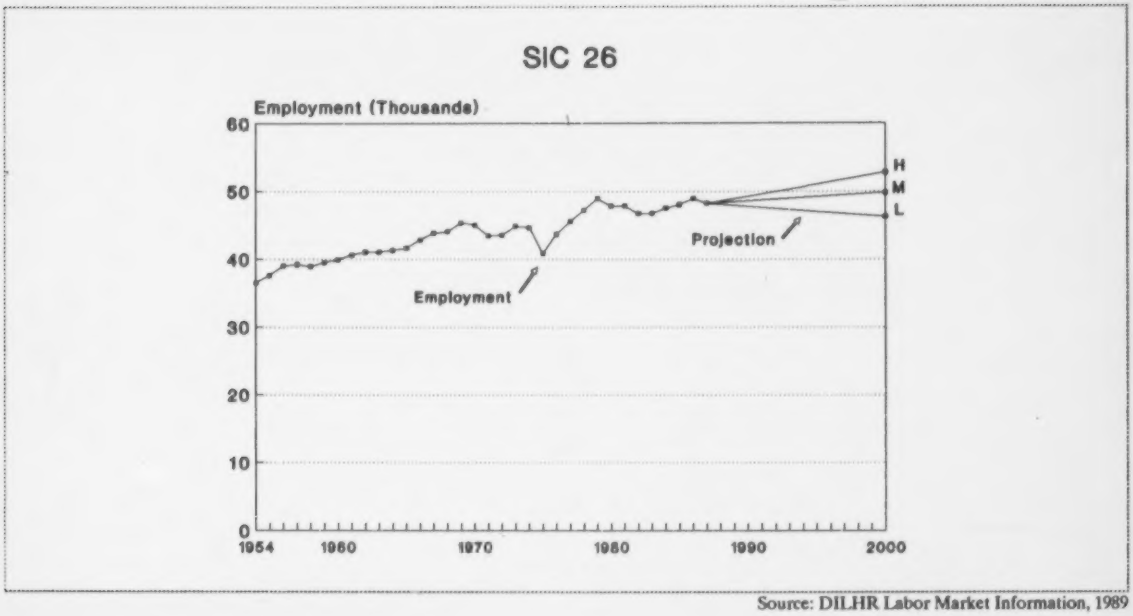
Source: DILHR Labor Market Information, 1989

Apparel and Other Textile Products, SIC 23, includes the manufacture of clothing and of other products made by cutting and sewing cloth, leather, rubberized fabrics, plastics, and furs. Wisconsin's largest sector of apparel is men's and boy's clothing which includes athletic clothing and winter coats and jackets.

The peak employment in this industry in Wisconsin was 8,100 in 1965. Since then the trend has been a gradual decline in employment. The low employment to date was 6,200 in 1985. In the past two years, however, there has been an increase of 500 workers.

The mean projection is for a small decrease to 6,100 employees in the year 2000. Some expect more of a decrease to 5,000 employees by the year 2000 due to foreign competition. Others expect that continued development of new products in the apparel industry in Wisconsin could cause a slight upward trend to 6,900 employees in the year 2000.

Paper and Allied Products



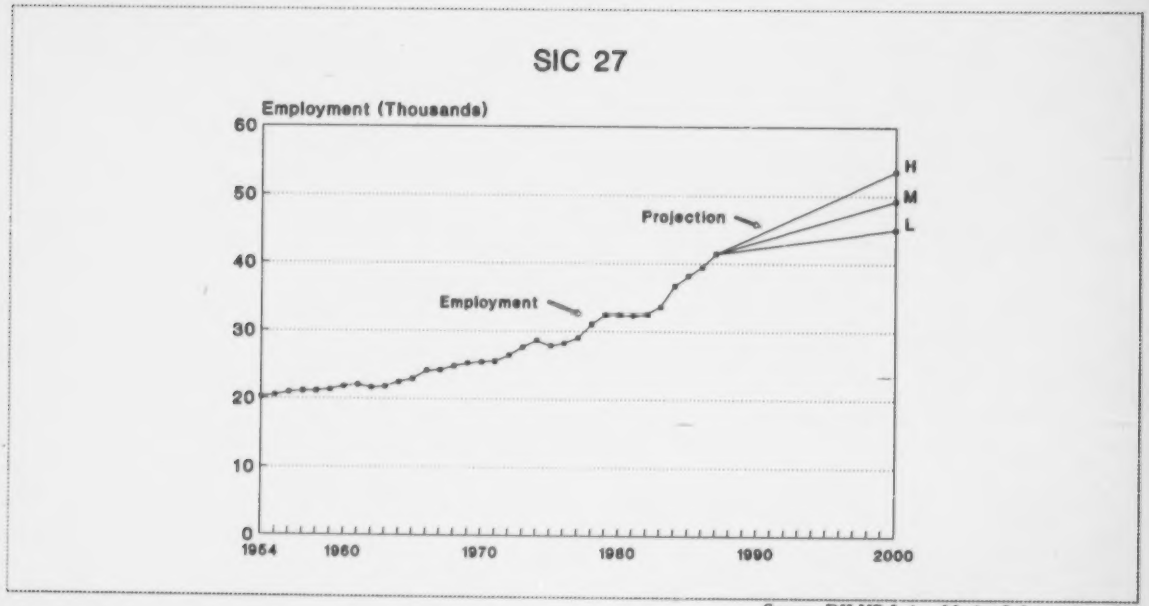
Source: DILHR Labor Market Information, 1989

Paper and Allied Products, Standard Industrial Classification 26, includes the manufacture of pulp, paper, and paperboard, and the manufacture of related products such as coated paper, paper bags, paper boxes, and envelopes. This is Wisconsin's second largest nondurable manufacturing industry.

From 36,500 employees in 1954, this industry grew to 48,900 employees. This strong growth occurred despite the recession in 1975, and the loss of some pulp and paper manufacturers. Some manufacturers moved south because southern states had less strict pollution controls at that time and because "trees grow faster in the south." The industry recovered from the most recent recession with a second peak employment of 48,900 in 1986.

The mean projection to the year 2000 is for a small growth in employment to 49,800 employees. Increased demand for paper products, including new printing companies, could lead to a high growth trend of 52,800 employees by the year 2000. The low projection is a small decline to 46,200 employees in the year 2000.

Printing and Publishing



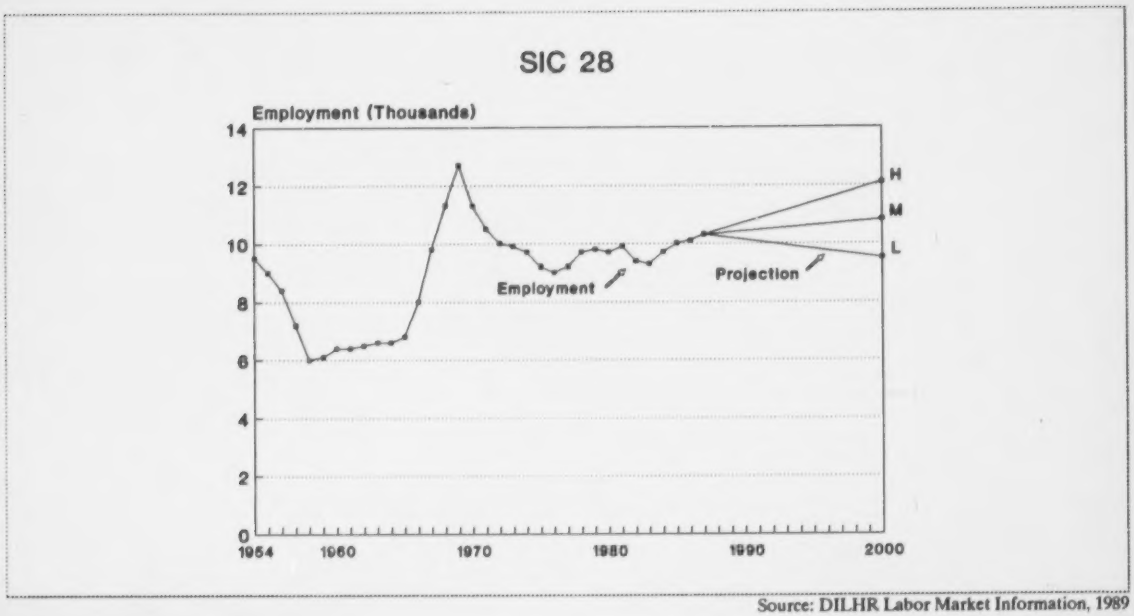
Source: DILHR Labor Market Information, 1989

Printing and Publishing, SIC 27, includes the publication of books, newspapers, periodicals, and business forms, all kinds of commercial printing, bookbinding, and other printing services.

There were 20,200 employees in printing and publishing in Wisconsin in 1954. By 1987 this number had more than doubled to 41,400 employees. Employment growth has been constant except for temporary lulls during the 1960, 1975, and 1980-82 recessions. This has been one of Wisconsin's fastest growing manufacturing industries.

Computerized desktop publishing is revolutionizing the industry. Increased use of electronic storage and transfer media has not diminished the use of paper copy for the wide distribution of information. The average, mean, projection is for growth to 49,200 employees by the year 2000. The high trend projected is for growth to 53,500 employees. The lowest trend is for growth to 45,000 employees by the year 2000.

Chemicals and Allied Products



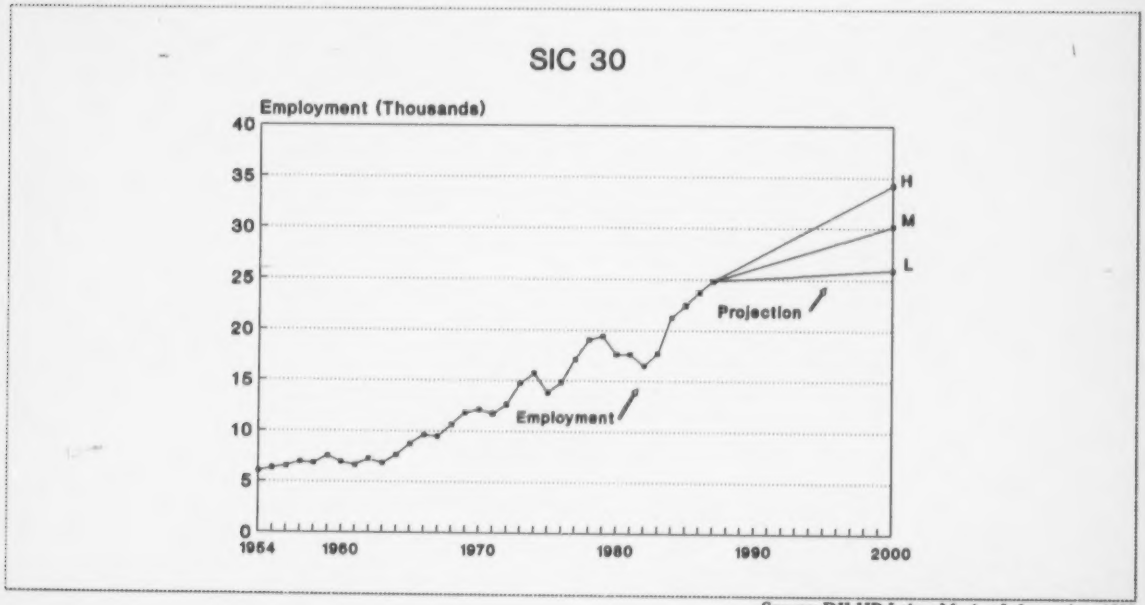
Source: DILHR Labor Market Information, 1989

Chemicals and Allied Products, SIC 28, includes industrial inorganic chemicals, plastics materials and synthetic resins, synthetic rubber, man made fibers, drugs, soaps and detergents, paints and varnishes, industrial organic chemicals, agricultural chemicals, and miscellaneous products such as printing ink, adhesives, and explosives.

Wisconsin employment in chemicals and allied products was 9,500 in 1954, and dropped to 6,000 in 1958. Employment reached a peak of 12,700 in 1969 during the Vietnam war, and dropped to 9,700 by 1974. Since then there appears to be a slight upward trend with dips and peaks depending upon the business cycle, with a 1987 annual average employment of 10,300.

The mean, or average, projection is for growth to 10,800 employees by the year 2000. The high projection of employment growth to 12,100 by 2000 reflects the possible high growth potential of some of these products. The low projection is for a small decline due to possible automated manufacturing processes.

Rubber and Miscellaneous Plastics Products



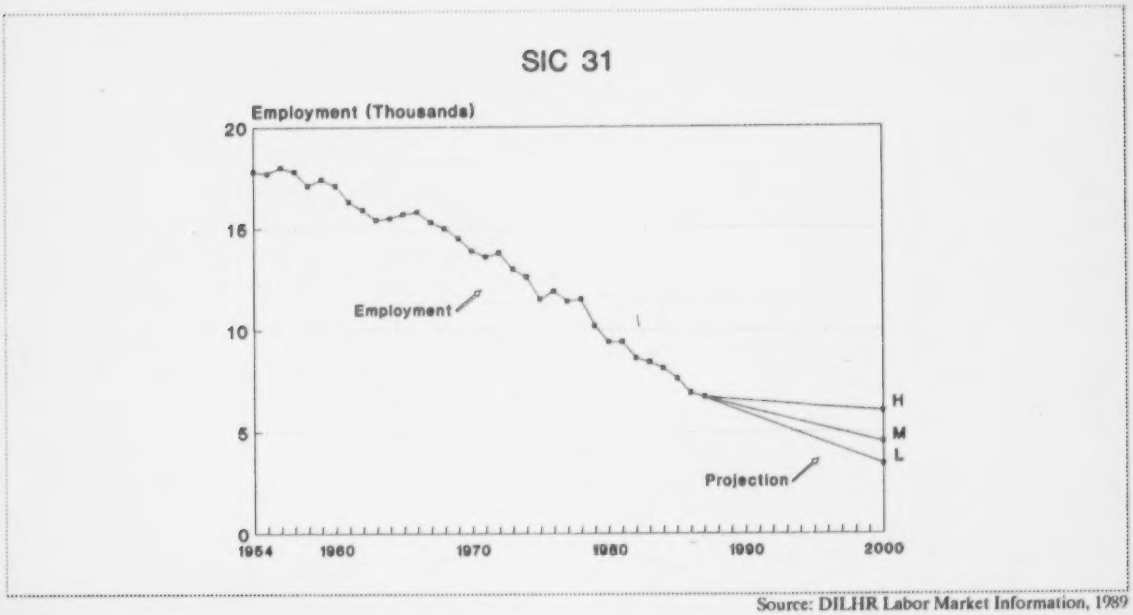
Source: DILHR Labor Market Information, 1989

Rubber and Miscellaneous Plastics Products, SIC 30, includes tires and inner tubes, rubber and plastic footwear, hose and belting and other fabricated or molded rubber and plastics products. This is classified as a nondurable industry because the useful life of the products is limited despite the fact that the material in these products may last a very long time.

Employment in the Rubber and Miscellaneous Plastics Products in Wisconsin averaged 6,000 workers in 1954. The increasing number of plastics products and the increasing use of plastics parts in other products has caused constant growth except during recessions. The annual average employment of 24,800 in 1987 was more than four times the 1954 employment. This is Wisconsin's fastest growing manufacturing industry.

The mean projected growth to 30,200 is somewhat slower growth than in recent years but the employment in the year 2000 would still be five times the 1954 employment. The high employment projection is to 34,200 employees by the year 2000. The low projection indicates some growth to 25,900 employees in 2000.

Leather and Leather Products



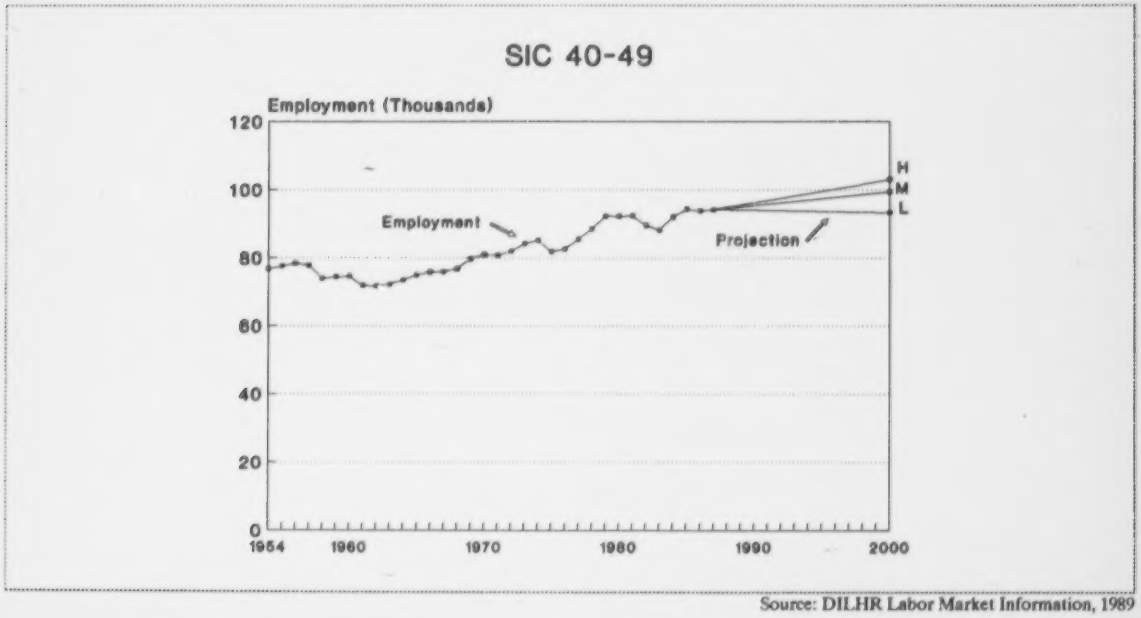
Source: DILHR Labor Market Information, 1989

Leather and Leather Products, Standard Industrial Classification 31, includes tanning of leather as well as finishing of leather and artificial leather products. Footwear is the major component of the leather industry in Wisconsin.

This industry was more important in Wisconsin in 1954 when it employed 17,800 workers. Producers in Wisconsin and in the United States as a whole have closed many establishments as production has shifted to other countries. As a result, employment in this industry has decreased. The 6,700 workers employed in Leather and Leather Products in 1987 was a little more than one third the 1954 employment.

The trend of declining employment in this industry is projected to continue to the end of the century. The mean projection is for a slower decrease than in the past to 4,500 workers in the year 2000. The high projection is for very little decrease to 6,000 employees. The low projection to 3,400 is in line with the past long term trend.

Transportation, Communication, and Public Utilities



Source: DILHR Labor Market Information, 1989

Transportation, Communication, and Public Utilities, Standard Industrial Classification numbers 40 through 49, includes railroads; trucking and warehousing; busses and taxi cabs; the United States postal service; water and air transportation; pipelines; communication by telephone, telegraph, radio and television; and electric, gas, and sanitary services.

Originally these industries were considered as a group because business activity in each of these segments was subject to similar government regulations for natural monopolies and/or interstate trade. Many of these regulations have been lifted over the past fifteen years.

Wisconsin employment in this industry decreased from 76,700 in 1954 to 71,700 in 1962. Since then there has been a growth trend interrupted only by the 1975 and 1982-1983 recessions. The peak employment was 94,200 in 1985, and has not changed significiantly since then.

The airlines have grown with competition but there have been losses and mergers in this transition. Trucking is expected to grow moderately. Continued expansion is expected in telecommunications through new products based on laser and fiber optics.

The mean projection is for growth to 99,400 employees by the end of the century. The high projection is for 103,000 employees in the year 2000. The low projection of 93,200 employees is based upon the assumption of continued automation and possible limitations in the ability to finance the public infrastructures that these industries require.

Wholesale and Retail Trade

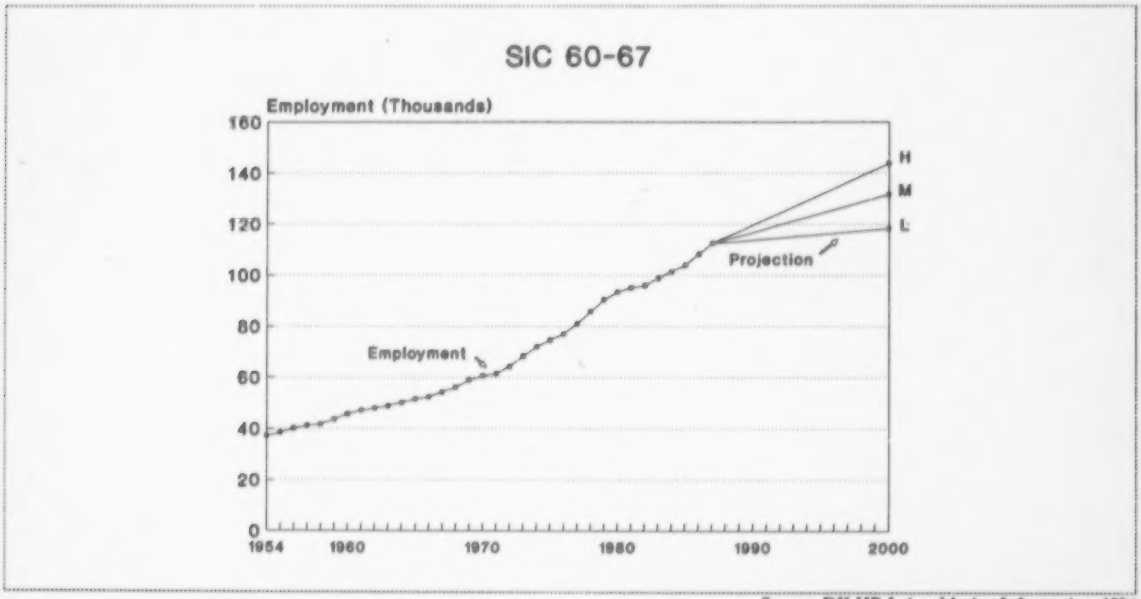
Source: DILHR Labor Market Information, 1989

Wholesale and Retail Trade covers Standard Industrial Classification codes 50 through 59. Wholesale Trade includes businesses primarily selling to retailers, to industry, businesses, or farms or to other wholesalers. Retail Trade includes general merchandise stores, food stores, automotive dealers and gasoline stations, clothing stores, furniture and home furnishing stores and eating and drinking places.

Wholesale and Retail Trade employed 222,200 workers in Wisconsin in 1954. Employment has grown every year since then with the exception of recessions in 1958 and 1980-82. Part of this growth has been in part time jobs, with rapid expansion in fast food restaurants, but we do not know whether any of the increase is due to changing from full time to part time work. The employment peak in 1987 of 495,200 employees represents a doubling of employment in the past twenty five years.

The average projection is for growth to 569,400 employees by the year 2000. This somewhat slower growth projection reflects a connection between retail sales and slowed population growth trends. The high projection is to 605,700 employees by the end of the century. The low projection to 518,800 employees reflects the possibility that retail outlets may already be over built, the possibility of further productivity gains and the likelihood that tighter labor markets may raise the costs of labor in retail trade.

Finance, Insurance, and Real Estate

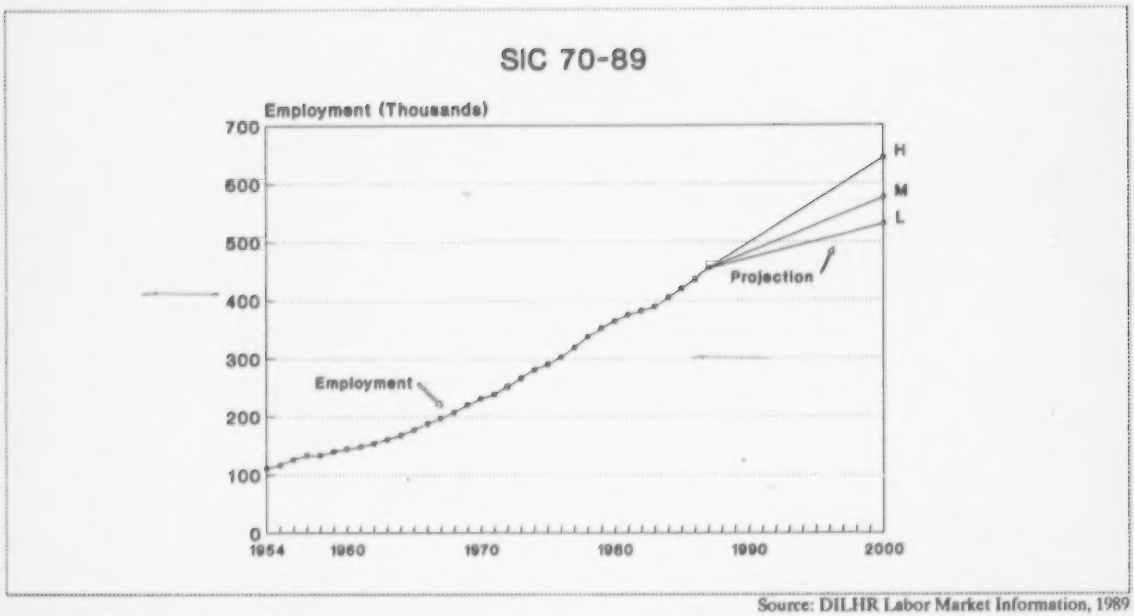


Source: DILHR Labor Market Information, 1989

Finance, Insurance, and Real Estate, SIC codes 60 through 67, includes banks, credit agencies, stock brokers, investment firms, insurance carriers and sales, and real estate.

Wisconsin employment in Finance, Insurance, and Real Estate was 37,200 in 1954. The industry has grown three times as large with 112,300 employees in 1987. Economic recessions have had less impact on employment in this industry than in most others. Early automation studies in the Wisconsin insurance industry showed that the computer was used to increase customer options rather than to reduce employment. The mean projection is for growth to 131,500 employees in the year 2000. The high projection is for employment of 143,800 by the end of the century. The low projection of growth to 118,200 could occur if automation is directed more toward reducing costs rather than to increasing sales of these financial services.

Services



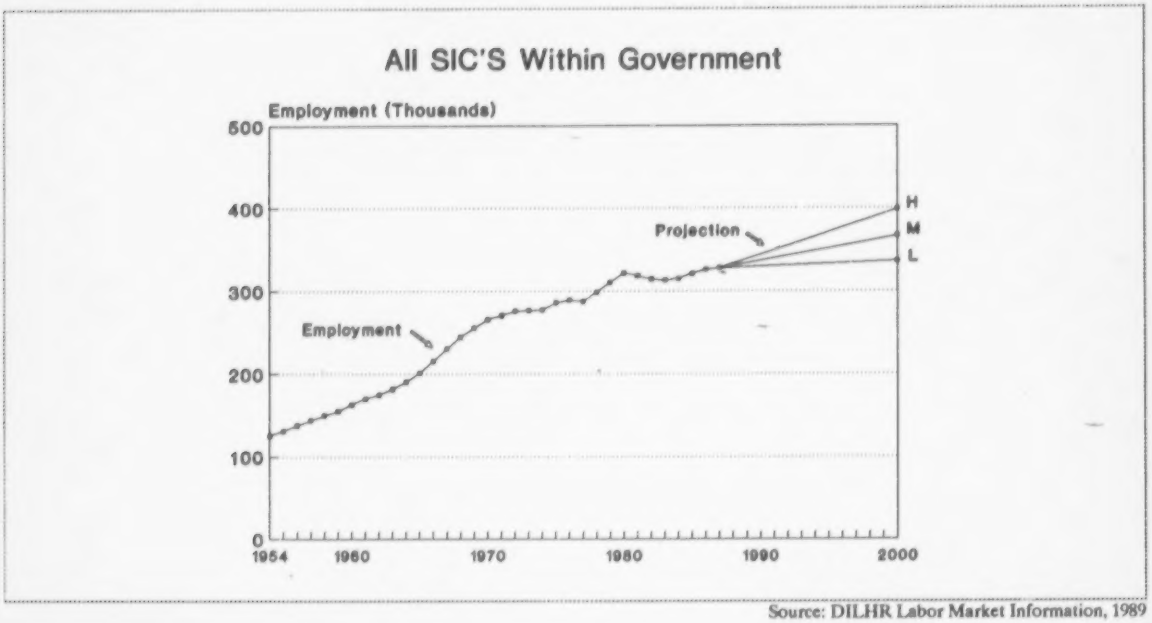
Source: DILHR Labor Market Information, 1989

Services, Standard Industrial Classifications 70 through 79, include hotels and lodging places; personal services such as beauty shops, business services, automobile and other repair services; amusement and recreation services; health services; legal and educational services; social services; membership organizations; museums, zoos, art galleries; other professional services; and domestic services in private households.

Employment in these service industries was 111,400 in 1954. Employment growth has generally not been affected greatly by recessions. The 1987 annual average employment of 454,900 was more than four times the size of the industry in 1954.

The service industry should not be confused with service occupations. All kinds of occupations are found in the service industry. As an example, the rapidly growing business services includes such diverse occupations as computer consultants and employees in temporary help agencies. Many interesting jobs with prestige, high wages, and security are in the service industry.

Growth is projected to remain strong. The mean projection is for 575,100 employees in the year 2000. The high projection is for 643,200 employees by the end of the century. Even the low projection indicates growth to 529,800 employees.



Source: DILHR Labor Market Information, 1989

Government, as we use it, is an ownership classification. We use codes 91 through 93 to refer to federal, state, and local levels of government. Government employment includes the industry of government. Government as an industry includes the executive and legislative offices, the courts, correctional institutions, and police and fire protection, public finance, the administration of human services, economic and environmental programs and national security and international affairs. Government as we use it also includes other industries that are publicly owned such as education, public utilities, public employment agencies, public health facilities and maintenance of streets and highways.

There were 125,300 government employees in Wisconsin in 1954. Employment grew rapidly until about 1970 when it reached 265,500. A part of this rapid growth was due to the baby boom and the resulting demand for teachers. Since then, government employment has continued to grow, but at a slower pace, reaching 327,300 in 1987.

The mean projection is for a continued increase in government employment to 366,200 in the year 2000 due to increased need for teachers, the demands involved in maintaining the public infrastructure that is essential to other industries and to the complexity of our society. The high projection is to 398,500 employees by the end of the century. The low growth to 335,600 by the year 2000 is based upon the potential problems of financing which could limit government services.

Methodology

Introduction

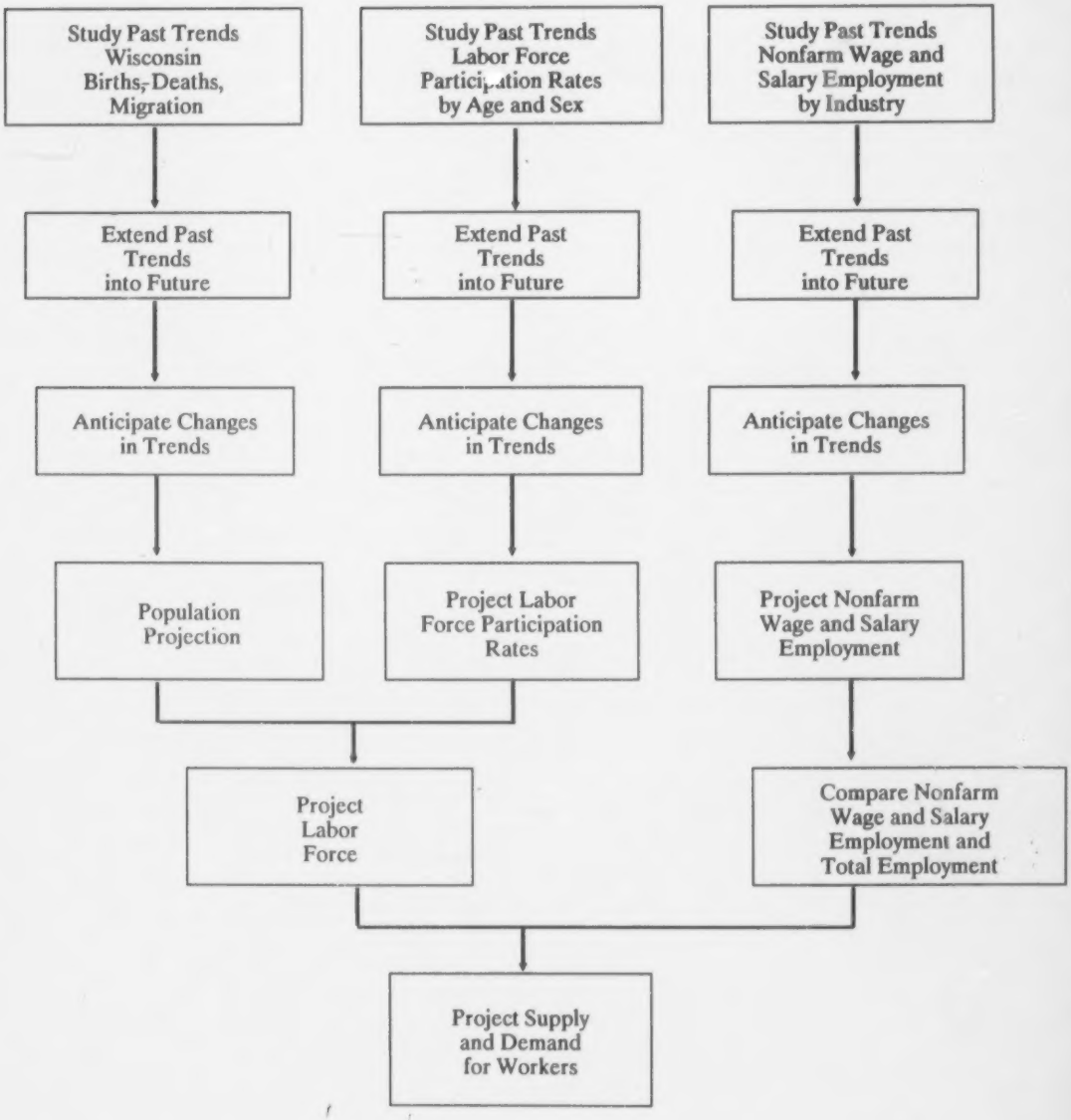
Development of these projections begins with gathering available statistics and the study, and graphing of past trends. If we can understand the changes in the past, we have a better basis for considering what changes could happen in the future.

The next step is to develop statistical projections of the future. These are used only to show some possible alternatives because there is no statistically valid method for projecting past trends ten or more years into the future. This step also involves looking at projections for the United States prepared by national experts, and looking at any available results from econometric or other models.

The final step is to analyze these trends and projections using current technological, social, and economic knowledge to anticipate likely changes in these trends and to select the most probable projection.

Summary Diagram

Steps in Projecting Labor Force and Industry Employment


Study Past Trends Wisconsin Births, Deaths, Migration
Study Past Trends Labor Force Participation Rates by Age and Sex
Study Past Trends Nonfarm Wage and Salary Employment by Industry
Extend Past Trends into Future
Extend Past Trends into Future
Extend Past Trends into Future
Anticipate Changes in Trends
Anticipate Changes in Trends
Anticipate Changes in Trends
Population Projection
Project Labor Force Participation Rates
Project Nonfarm Wage and Salary Employment
Project Labor Force
Compare Nonfarm Wage and Salary Employment and Total Employment
Project Supply and Demand for Workers

Industry Employment Methodology

Information about past employment trends is gathered. It is important to use a long period of past data when projecting ten years in the future. Statistically we should have at least fifty years of past data to project 5 years into the future, which helps to explain why statistical projections cannot be used by themselves.

The current employment statistics (CES) program provides the industry employment information used for the state industry projections. A time series of comparable information is available from 1954 to the present for the state in most broad industry groups. Unfortunately, less detail is available for the service producing industries than for manufacturing.

These past trends are extended into the future. Several mathematical curves are statistically fit to this past data. Projections are also obtained by applying the Bureau of Labor Statistics industry projections for the United States to our Wisconsin base data, by using a commercial projections program and from the Wisconsin Department of Development econometric model. The past trends and these projections are graphed using a scale that magnifies the changes for analysis by showing only the range from the lowest to highest employment numbers. All of the data is provided to a group of analysts from within and outside of the Department of Industry, Labor and Human Relations.

Participating analysts review the information provided and use their knowledge of current technological, economic and social developments to anticipate future scenarios and probable changes in the trends. These analysts are our projection panel. Each analyst provides their independent projection of industry employment.

The mean projection is the average of all of the projections received from participating analysts. The high projection is the average of the three highest employment projections. The low projection is the average of the three lowest employment projections.

Projections Panel Participants

Projecting labor market conditions is an art, not a science. Despite our ability to collect and process massive amounts of data, the projections process is not a mechanical exercise provided by our panel of economists and analysts knowledgeable about Wisconsin's economy. Members of this group included:

- ☐ Franz Backus, Wage Record Planner, Unemployment Compensation Division, Department of Industry, Labor and Human Relations
- ☐ August Cibarich, Chief Economist, Bureau of Labor Market Information, Department of Industry, Labor and Human Relations
- ☐ John Henning, Research Analyst, Bureau of Labor Market Information, Department of Industry, Labor and Human Relations
- ☐ H. J. Jackson, Director, Bureau of Labor Market Information, Department of Industry, Labor and Human Relations
- ☐ Patrick Luby, Economist and Vice President, Oscar Mayer Company
- ☐ Dale Nordeen, President, First Federal Savings and Loan
- ☐ Donald Nichols, Professor, Department of Economics, University of Wisconsin, Madison
- ☐ David Peterson, Economist, Research and Analysis Division, Department of Revenue
- ☐ Randel Pilo, Lead Economist, Research and Analysis Division, Department of Development
- ☐ Tom Rondou, Research Analyst, Bureau of Labor Market Information, Department of Industry, Labor and Human Relations
- ☐ Gerald Snow, Chief, Analysis and Publications, Bureau of Labor Market Information, Department of Industry, Labor and Human Relations
- ☐ Joseph Tumpach, Research Analyst, Bureau of Labor Market Information, Department of Industry, Labor and Human Relations

Labor Force Methodology

The labor force is the number of people sixteen years of age or over who are either working, looking for work or expecting recall to their last job. The labor force participation rate is the number of people in the labor force divided by the number of people in the population who are sixteen years of age and over. People in institutions, such as hospitals or prisons, are normally excluded from the population figure. Labor force participation rates differ for different age groups and for men and women.

The labor force is projected by projecting the population by age and by sex, projecting the labor force participation rate by age and sex and then multiplying the projected population by the projected labor force participation rate for each age and sex.

Population Methodology

Population projections are prepared by the Wisconsin Department of Administration Demographic Services Center working closely with the University of Wisconsin Department of Rural Sociology Applied Population Laboratory. Population projections involve birth rates, mortality rates, aging and mobility.

Since the labor force in the year 2000 is already born, the natural changes in the labor force due to births, deaths and aging can be projected quite accurately. Mobility is more difficult to project. Labor market information is used by the Demographic Services Center in their projections because mobility depends partially upon job opportunities in an area.

Labor Force Participation Rate Methodology

Past trends in labor force participation rates are analyzed by studying annual United States participation rates for men and women in seven age groups from 1950 to 1987. Wisconsin labor force participation rates for these age groups by sex is available only for the Census years.

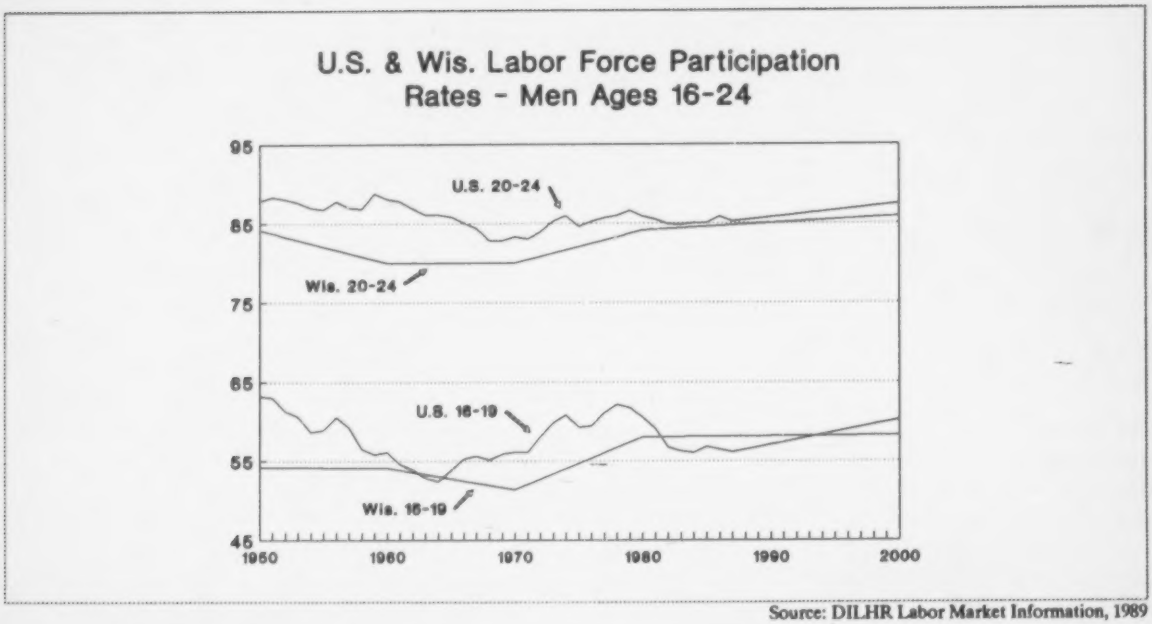
National projections of labor force participation rates by the Bureau of Labor Statistics which included their assessment of likely changes in past trends are plotted. Mathematical curves are statistically fit to the participation rate numbers to consider possible alternative national projections before accepting the Bureau of Labor Statistics projections as the standard for the national projections.

The trend in the relationship of the Wisconsin labor force participation rates for the four Census years to the United States participation rates for these years is used to arrive at a projected rate for Wisconsin.

Graphs that magnified the changes are prepared for analysis by using a scale ranging from the lowest to the highest participation rates. Resulting labor force projections are then reviewed by several labor market analysts before accepting them.

The description of trends in labor force participation rates that follows combines the seven age groups into three groups for brevity and to show the similarities that exist within the three groups.

Men 16-24



Source: DILHR Labor Market Information, 1989

There is no significant trend in participation rates for men 16-19 years old. The changes in the 1960's seem to reflect the interests of the 60's youth in alternative life styles. The participation rates for men age 20-24 reflect an aging of the 1960's youth in the lower rate in the early 1970's. Comparison of the two age groups, shown in the graph, shows the persistence of this pattern as the youth aged. Note that the United States data is annual while Wisconsin data is available only during Census years.

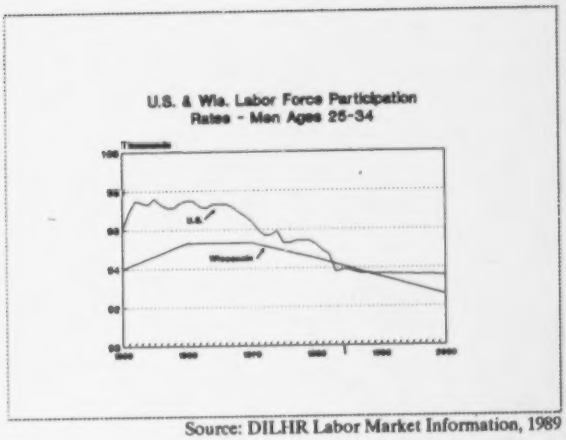
High unemployment in the 1980's, the smaller real dollar value of minimum wage jobs and greater value placed upon travel and education are now limiting labor force participation among younger workers. It is probable that the smaller number of younger workers in the year 2000 will increase job opportunities and improve pay scales resulting in an increase in participation rates for men ages 16 through 24. The Bureau of Labor Statistics has projected a United States labor force participation rate of 60.2 percent for men age 16-19 and of 87.5 percent for men age 20-24 in the year 2000.

Wisconsin's participation rate has been lower than the U.S. rate in the Census years since 1950. We assume Wisconsin will continue to be below the U.S. rate in 2000, for a Wisconsin rate of 58.2 percent for men age 16-19 and 85.9 percent for men age 20-24.

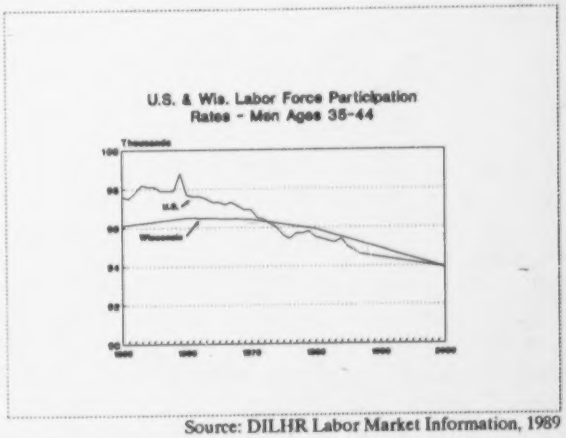
Men 25-54

There has been a continuous decline in U.S. participation rates in these age groups since the late 1950's. Note all three age groups show the same general pattern of change on the graph. It is probable that this decline is due to the increased participation of women in the labor force and to increased wealth, reducing the necessity of men working. Some of the decline could also result from men dislocated from former employment or who accepted early retirement that was offered to reduce employment and who now have little hope of finding new jobs.

The Bureau of Labor Statistics projects national participation rates of 93.6 percent for men age 25-34, of 93.9 percent for men age 35-44 and of 90.1 percent for men age 45-54 in the year 2000. Based upon past Census relationships between Wisconsin and national participation rates, the projected Wisconsin participation rates for men in the year 2000 are 92.6 percent for ages 25-34, 93.9 percent for ages 35-44 and 91.1 percent for ages 45-54.



Source: DILHR Labor Market Information, 1989



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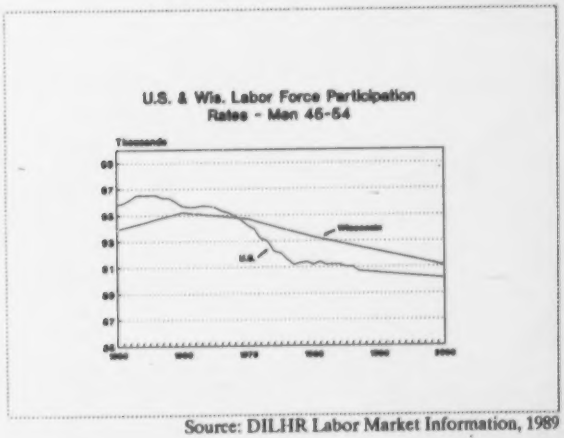
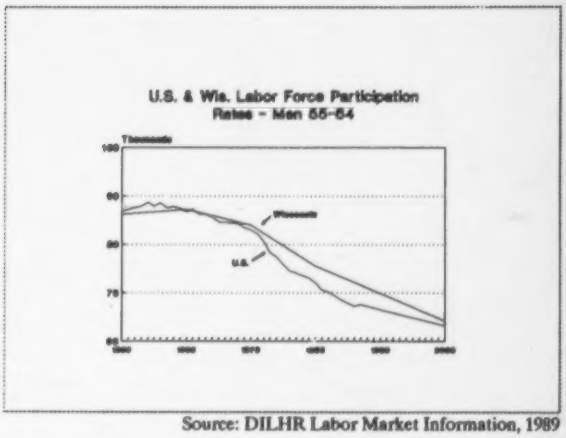


Source: DILHR Labor Market Information, 1989

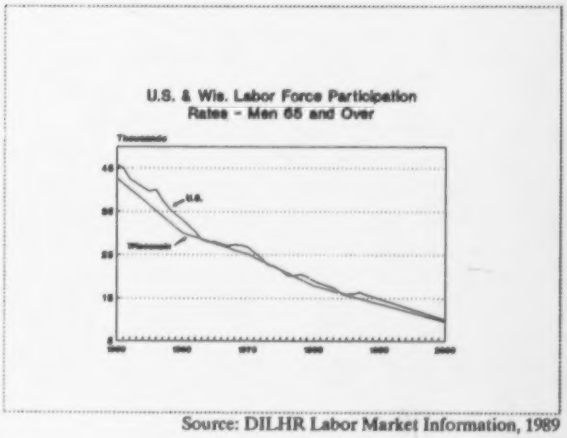
Men Ages 55 and Over

The downward trend in labor force participation by men ages 55-64 and 65 and over is clear in this graph. This downward trend may be slowing down, and will stop at some point--participation rates obviously cannot be negative numbers! But, the fact that people are living longer does not necessarily mean that older men want to work or that they are in better working condition than they used to be, and it is likely that participation rates will continue to decline until at least the year 2000. The baby boom will not reach retirement age until after the year 2000--and it is too early to project what may happen then.



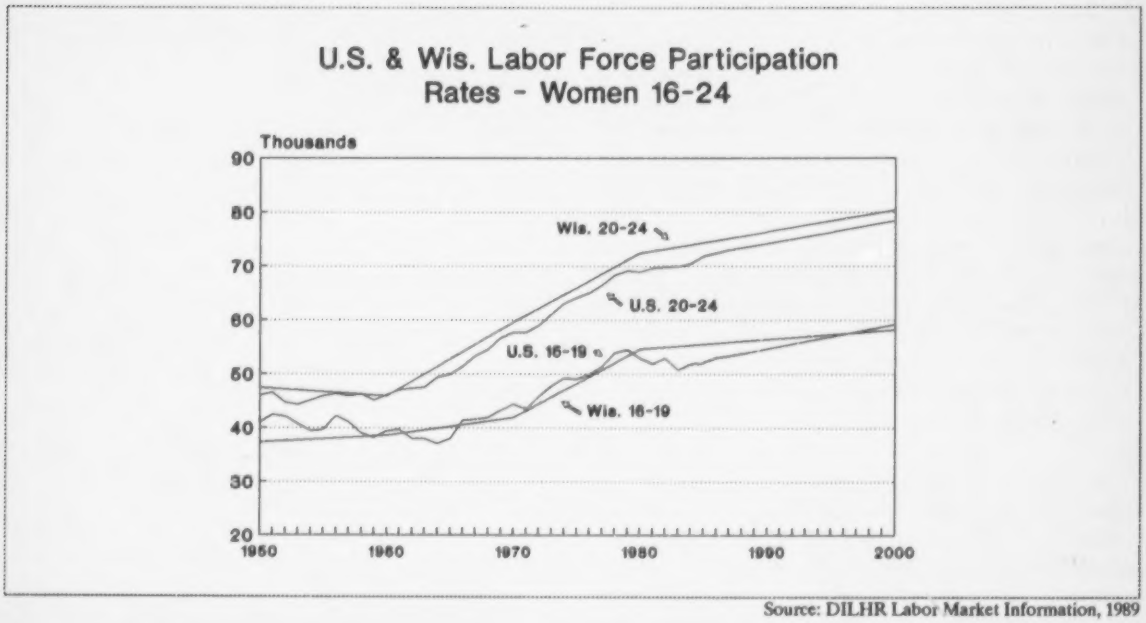
Source: DILHR Labor Market Information, 1989

The Bureau of Labor Statistics projects national participation rates of 63.2 percent for men age 55-64, and of 9.9 percent for men age 65 and over by the year 2000. Based upon past relationships between state and national Census data, the Wisconsin projection is 64.2 percent for men age 55-64, and 9.6 percent for men age 65 and over.



Source: DILHR Labor Market Information, 1989

Women Ages 16-24



Source: DILHR Labor Market Information, 1989

Participation rates for women ages 16-19 and 20-24 are increasing. While there appears to be an indication of the interest in alternative life styles in the early 1960 participation rates for women ages 16-19, these trends for younger women are much more stable than the trends for younger men. By the year 2000 the participation rates for women ages 16-19 may equal those for men in that age group and rates for women 20-24 may approach those for men.

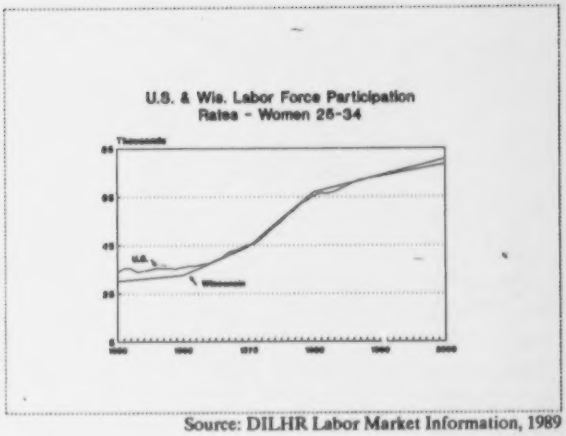
The Bureau of Labor Statistics projects national participation rates of 59.2 percent for women age 16-19 and of 78.4 percent for women age 20-24. Based upon past Census relationships, the Wisconsin participation rates will be 58.2 percent for women age 16-19 and 80.4 percent for women age 20-24.

Women Ages 25-54

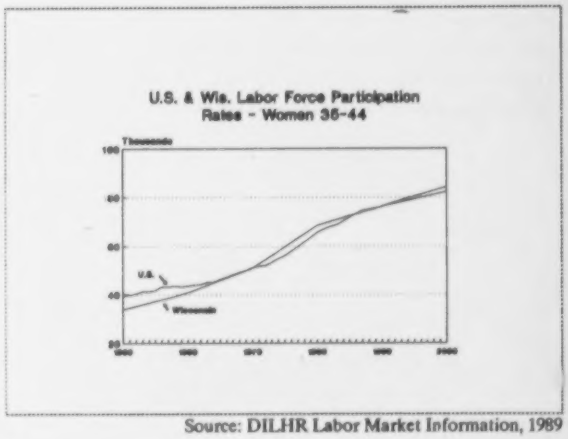
In the ages groups 25-34, 35-44, and 45-54 there is a consistent, near straight line, increase in national participation rates for women. Reasons for this trend include increased numbers of women who are single, increased numbers of married women who need to work, gains by women in the effort to achieve equality in the workplace and growth in employment in services and trade which have traditionally employed women.

Wisconsin will probably follow this national trend. But, the Wisconsin participation rate for women age 45-54 was above the national rate in 1980. We expect the rate for this 45-54 age group in Wisconsin to increase more slowly than on the national level.

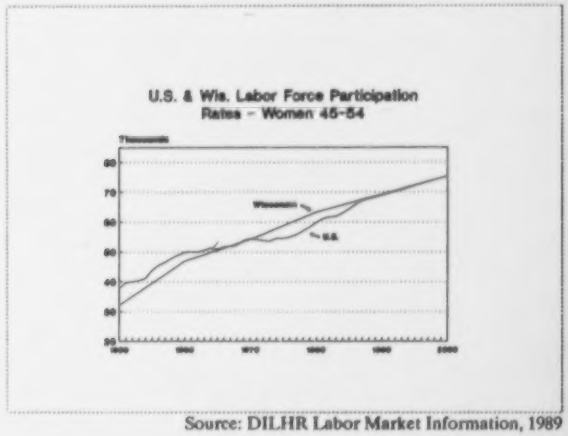
The Bureau of Labor Statistics projects national participation rates of 78.4 percent for women age 25-34, of 82.3 percent for women age 35-44 and of 75.4 percent for women age 45-54. The projected Wisconsin participation rates are 80.4 percent for women age 25-34, 84.2 percent for women age 35-44 and 75.4 percent for women age 45-54.



Source: DILHR Labor Market Information, 1989



Source: DILHR Labor Market Information, 1989



Source: DILHR Labor Market Information, 1989

Women Ages 55 and Over

National participation rates for women ages 55-64 increased until about 1970. Since then there has been little change. Participation rates for women age 65 and over have been declining at a slow steady pace.

The Bureau of Labor Statistics projects national participation rates of 45.8 percent for women age 55-64 and 5.4 percent for women age 65 and over. The Wisconsin participation rate for women ages 55-64 was higher than the national rate in 1970 and 1980. The projected rate for women ages 55-64 of 46.0 percent remains slightly above the projected national rate. As a higher proportion of women 55-64 working in Wisconsin age, the projected Wisconsin labor force participation rate for women age 65 and over is expected to be 5.6 percent which is a little higher than the projected national average.

Source: DILHR Labor Market Information, 1989

Source: DILHR Labor Market Information, 1989

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Statistical Tables

Standard Industrial Code (SIC) Conversion Table

SIC	INDUSTRY
10-14	Mining
15-17	Construction
20-39	Manufacturing
	Durable Goods
24	Lumber and Wood Products
25	Furniture and Fixtures
32	Stone, Clay, Glass, and Concrete
33	Primary Metal Industries
34	Fabricated Metal Products
35	Nonelectrical Machinery
36	Electrical and Electronic Equipment
37	Transportation Equipment Manufacturing
38	Instruments and Related Products
39	Miscellaneous Manufacturing
	Nondurable Goods Manufacturing
20	Food and Kindred Products
22	Textile Mill Products
23	Apparel and Other Textile Products
26	Paper and Allied Products
27	Printing and Publishing
28	Chemicals and Allied Products
30	Rubber and Miscellaneous Plastics Products
31	Leather and Leather Products
40-49	Transportation, Communication, and Public Utilities
50-59	Wholesale and Retail Trade
60-67	Finance, Insurance, and Real Estate
70-89	Services
	Government

Total Labor Force

Annual Average (000)

Year	Civilian Labor Force	Unemployment		Employment	Nonfarm Wage & Salary
		Number	% of Labor Force		
1954	1557.9	65.1	4.2	1489.3	1069.6
1955	1575.1	46.7	3.0	1525.3	1108.1
1956	1605.4	43.1	2.7	1558.7	1146.9
1957	1603.5	48.8	3.0	1553.4	1152.0
1958	1602.7	82.4	5.1	1517.9	1114.9
1959	1619.7	52.3	3.2	1563.9	1166.0
1960	1647.0	64.9	3.9	1580.6	1191.9
1961	1644.6	82.0	5.0	1561.4	1179.9
1962	1654.0	68.4	4.1	1584.5	1207.2
1963	1676.2	68.9	4.1	1606.0	1233.5
1964	1699.3	66.1	3.9	1630.7	1270.9
1965	1741.5	59.6	3.4	1680.6	1331.7
1966	1782.8	56.6	3.2	1724.2	1394.1
1967	1812.8	65.4	3.6	1744.2	1430.5
1968	1853.9	63.9	3.4	1787.2	1472.1
1969	1903.4	63.7	3.3	1835.8	1525.1
1970	1830.0	72.0	4.0	1757.0	1530.4
1971	1844.0	84.0	4.5	1761.0	1525.4
1972	1892.0	81.0	4.3	1812.0	1580.8
1973	2030.0	82.0	4.0	1948.0	1660.5
1974	2059.0	93.0	4.5	1966.0	1703.4
1975	2098.0	146.0	6.9	1952.0	1676.8
1976	2148.0	120.0	5.6	2028.0	1725.9
1977	2181.0	107.0	4.9	2073.0	1798.9
1978	2263.0	116.0	5.1	2147.0	1887.0
1979	2331.0	105.0	4.5	2226.0	1960.2
1980	2340.0	167.0	7.2	2172.0	1938.1
1981	2370.0	185.0	7.8	2185.0	1923.2
1982	2439.0	260.0	10.7	2180.0	1866.8
1983	2426.0	253.0	10.4	2172.0	1864.6
1984	2389.0	175.0	7.3	2214.0	1949.2
1985	2373.0	171.0	7.2	2202.0	1983.1
1986	2403.0	169.0	7.0	2234.0	2023.9
1987	2491.0	152.0	6.1	2339.0	2079.7
Projections to the Year 2000					
Mean	2647.2				2361.0
High					2576.0
Low					2142.0

Goods and Service Producing Summary

Annual Average Employment (000)

Year	Goods Producing	Standard Indurtry Code (SIC)			Durable Goods	Non-durable Goods	Service Producing
		10-14	15-17	19-39			
1954	496.8	3.9	51.0	441.9	270.4	171.5	572.8
1955	518.9	4.0	56.9	458.0	286.5	171.5	589.2
1956	533.5	4.0	58.1	471.4	298.3	173.0	613.4
1957	522.8	3.9	55.1	463.8	292.0	171.8	629.2
1958	487.4	3.6	52.0	431.8	265.0	166.8	627.6
1959	516.7	3.5	53.4	459.8	291.2	168.6	649.4
1960	520.2	3.8	56.0	460.4	291.7	168.7	671.6
1961	498.1	3.4	55.7	439.0	271.9	167.1	682.0
1962	512.6	3.1	53.6	455.9	289.7	166.3	694.7
1963	519.0	2.6	55.0	461.4	296.9	164.5	714.5
1964	529.0	2.7	56.7	469.6	303.3	166.2	741.9
1965	554.3	2.8	59.6	491.9	322.5	169.4	777.5
1966	575.5	2.7	64.2	508.6	334.9	173.7	818.6
1967	575.4	2.6	64.1	508.7	333.6	175.1	855.1
1968	578.6	2.4	65.9	510.3	332.2	178.2	893.5
1969	590.1	2.6	66.6	520.9	339.1	181.7	935.0
1970	565.5	2.6	62.0	500.9	321.5	179.4	965.0
1971	542.8	2.5	60.7	479.6	304.2	175.4	982.6
1972	560.8	2.5	62.9	495.4	317.9	177.5	1020.0
1973	601.2	2.6	66.9	531.7	348.4	183.3	1059.3
1974	614.5	2.8	65.6	546.1	360.7	185.3	1088.8
1975	570.3	2.7	60.6	507.0	330.3	176.7	1106.5
1976	586.6	2.5	64.7	519.4	336.6	182.8	1139.4
1977	616.7	2.6	73.7	540.4	351.1	189.3	1182.7
1978	650.8	2.6	78.5	569.7	373.7	196.0	1236.2
1979	674.4	2.6	80.5	591.3	393.7	197.6	1285.7
1980	630.7	2.6	70.1	558.0	364.4	193.6	1307.5
1981	610.7	2.4	64.8	543.5	351.5	192.0	1312.6
1982	557.0	1.9	56.9	498.2	310.8	187.4	1309.7
1983	543.7	1.9	57.7	484.1	295.7	188.4	1321.1
1984	584.0	1.9	63.2	518.9	322.5	196.4	1365.1
1985	580.4	1.9	64.6	513.9	315.5	198.4	1402.7
1986	584.4	1.9	68.0	514.5	312.8	201.7	1439.5
1987	595.8	2.0	67.4	526.4	321.8	204.6	1483.8
Projections to the Year 2000							
Mean	620.0	1.8	71.1	547.1	331.4	215.6	1741.6
High	682.0	2.2	74.8	605.0	369.8	235.2	1894.0
Low	546.4	1.2	66.3	478.9	283.9	195.0	1595.6

Durable Goods Manufacturing

Annual Average Employment (000)

Year	Total	Standard Industry Codes (SIC)									
		24	25	32	33	34	35	36	37	38	39
1954	270.4	18.5	9.9	5.1	24.6	33.2	82.7	46.9	31.2	9.0	9.2
1955	286.5	19.3	10.7	5.7	26.2	33.5	88.7	48.6	35.1	9.2	9.6
1956	298.3	19.2	10.7	6.2	28.5	34.2	96.4	51.3	33.5	7.0	11.4
1957	292.0	18.2	10.1	6.2	27.8	32.6	94.8	49.3	33.6	6.3	13.1
1958	265.0	16.5	9.1	6.1	23.5	30.8	83.6	44.5	34.5	4.8	11.6
1959	291.2	17.4	9.2	6.4	26.4	33.1	87.7	51.3	45.2	4.9	9.6
1960	291.7	16.3	8.2	6.5	24.6	33.8	86.5	54.9	48.4	4.4	8.1
1961	271.9	15.1	7.2	6.6	23.7	32.3	82.0	53.2	39.0	4.2	8.5
1962	289.7	15.5	7.1	6.6	25.4	34.1	87.4	55.1	44.7	4.3	9.3
1963	296.9	16.0	6.8	6.7	25.6	34.6	92.0	53.4	46.7	5.0	10.1
1964	303.3	16.6	7.0	6.9	26.7	35.7	97.5	53.5	43.6	5.9	9.9
1965	322.5	16.8	7.3	7.1	29.0	38.7	106.2	55.5	45.6	6.1	10.1
1966	334.9	17.0	8.0	7.9	31.3	40.0	113.7	58.6	40.0	6.8	11.7
1967	333.6	16.7	7.9	7.5	30.6	40.8	114.7	57.2	35.9	8.3	14.1
1968	332.2	16.9	8.1	7.9	29.9	41.5	112.5	53.7	37.8	9.3	14.5
1969	339.1	16.9	8.5	8.3	31.0	44.6	114.3	54.3	36.9	9.8	14.5
1970	321.5	15.6	7.8	8.1	30.1	43.8	108.2	48.6	36.2	9.0	14.1
1971	304.2	16.0	7.7	7.8	27.4	42.4	99.2	45.8	36.5	8.5	12.9
1972	317.9	18.5	8.0	8.4	23.2	52.7	102.8	47.7	37.1	9.7	9.6
1973	348.4	19.4	9.3	8.5	26.3	56.6	111.5	53.3	42.8	10.5	10.3
1974	360.7	19.4	9.4	8.6	28.2	58.4	119.1	54.6	42.5	10.2	10.5
1975	330.3	17.9	8.4	8.1	26.0	51.2	112.4	45.3	41.7	9.6	9.8
1976	336.6	20.0	9.0	8.7	24.7	53.2	112.9	46.3	41.2	10.2	10.3
1977	351.1	21.7	9.7	9.5	25.9	56.0	116.5	50.3	40.0	11.0	10.6
1978	373.7	23.4	10.2	9.8	28.0	59.4	123.4	54.6	41.9	12.0	11.2
1979	393.7	23.3	10.5	10.0	29.6	60.9	134.5	58.2	42.6	12.4	11.6
1980	364.4	20.7	9.6	9.1	26.1	58.4	125.7	56.8	34.7	12.4	10.9
1981	351.5	20.4	9.5	8.7	25.4	57.2	118.4	55.5	33.4	12.1	10.8
1982	310.8	18.3	8.7	7.9	20.1	50.7	103.9	50.0	29.9	11.0	10.1
1983	295.7	20.2	8.9	7.8	17.6	48.6	92.7	49.1	33.3	10.5	9.6
1984	322.5	22.4	9.8	8.1	19.9	51.9	101.9	52.1	35.3	11.2	10.0
1985	315.5	22.9	9.8	7.9	19.5	51.4	100.5	49.9	32.3	11.4	9.8
1986	312.8	24.2	10.3	8.2	19.2	52.1	99.7	47.8	30.5	11.4	9.3
1987	321.8	26.4	10.9	9.0	19.8	53.4	102.0	46.6	32.7	11.8	9.1
Projections to the Year 2000											
Mean	331.4	28.4	12.1	9.4	18.7	57.1	106.8	49.8	26.4	13.3	9.5
High	369.8	31.3	13.0	10.3	22.5	62.0	117.2	52.7	33.1	16.6	11.1
Low	283.9	24.8	10.3	8.1	14.8	47.4	93.6	45.7	21.6	9.5	8.1

Nondurable Goods Manufacturing

Annual Average Employment (000)

Year	Total	Standard Industry Codes (SIC)								
		20	22	23	26	27	28	29	30	31
1954	171.5	65.1	7.9	7.9	36.5	20.2	9.5	0.7	6.0	17.8
1955	171.5	63.9	8.1	7.8	37.6	20.5	9.0	0.7	6.3	17.7
1956	173.0	64.2	8.0	7.5	39.0	20.9	8.4	0.6	6.5	18.0
1957	171.8	64.4	7.5	7.2	39.2	21.1	7.2	0.6	6.9	17.8
1958	166.8	62.9	6.6	6.8	38.9	21.1	6.0	0.5	6.8	17.1
1959	168.6	61.9	7.2	7.1	39.5	21.3	6.1	0.5	7.5	17.4
1960	168.7	62.1	6.9	7.2	39.9	21.8	6.4	0.5	6.9	17.1
1961	167.1	61.0	6.5	7.1	40.6	22.0	6.4	0.5	6.6	16.3
1962	166.3	59.4	6.5	7.7	41.0	21.6	6.5	0.5	7.2	15.9
1963	164.5	58.6	6.3	7.6	41.0	21.8	6.6	0.5	6.8	15.4
1964	166.2	58.2	6.5	7.6	41.3	22.4	6.6	0.5	7.6	15.5
1965	169.4	58.3	6.7	8.1	41.6	22.9	6.8	0.5	8.7	15.7
1966	173.7	58.4	6.6	7.9	42.8	24.1	8.0	0.5	9.6	15.8
1967	175.1	58.1	6.1	7.9	43.8	24.2	9.8	0.4	9.4	15.3
1968	178.2	58.3	6.1	7.8	44.0	24.8	11.3	0.4	10.6	15.0
1969	181.7	57.6	6.8	7.4	45.3	25.2	12.7	0.4	11.8	14.5
1970	179.4	57.6	7.0	6.8	45.0	25.4	11.3	0.4	12.1	13.9
1971	175.4	57.2	6.6	6.5	43.4	25.5	10.5	0.4	11.7	13.6
1972	177.5	57.3	6.7	6.9	43.5	26.4	10.0	0.4	12.6	13.8
1973	183.3	58.8	7.0	7.1	44.8	27.6	9.9	0.4	14.7	13.0
1974	185.3	60.3	6.5	7.0	44.6	28.6	9.7	0.4	15.7	12.6
1975	176.7	61.6	5.3	6.4	40.8	27.8	9.2	0.4	13.8	11.5
1976	182.8	62.5	5.5	7.0	43.6	28.2	9.0	0.4	14.8	11.9
1977	189.3	64.1	5.8	6.8	45.5	29.0	9.2	0.4	17.1	11.4
1978	196.0	64.1	6.1	7.0	47.2	31.0	9.7	0.4	19.0	11.5
1979	197.6	64.6	5.4	6.6	48.9	32.4	9.8	0.4	19.4	10.2
1980	193.6	64.9	4.7	6.5	47.8	32.4	9.7	0.4	17.6	9.4
1981	192.0	64.2	3.9	6.4	47.8	32.3	9.9	0.4	17.6	9.4
1982	187.4	63.0	4.0	6.4	46.7	32.5	9.4	0.4	16.5	8.6
1983	188.4	61.7	4.2	6.4	46.7	33.6	9.3	0.4	17.7	8.4
1984	196.4	62.2	4.3	6.4	47.5	36.6	9.7	0.4	21.2	8.1
1985	198.4	61.6	4.2	6.2	48.0	38.1	10.0	0.3	22.4	7.6
1986	201.7	62.0	3.9	6.5	48.9	39.4	10.1	0.3	23.7	6.9
1987	204.6	61.8	4.4	6.8	48.2	41.4	10.3	0.3	24.8	6.7
Projections to the Year 2000										
Mean	215.6	61.6	3.4	6.1	49.8	49.2	10.8		30.2	4.5
High	235.2	65.3	4.2	6.9	52.8	53.5	12.1		34.2	6.0
Low	195.0	57.3	2.5	5.0	46.2	45.0	9.5		25.9	3.4

Service Producing

Annual Average Employment (000)

Year	Total	Standard Industry Codes (SIC)									
		40-49	50-59	50-51	52-59	60-67	70-89	90-94	91	92	93
1954	572.8	76.7	222.2			37.2	111.4	125.3			
1955	589.2	77.5	225.1			38.5	117.1	131.0			
1956	613.4	78.3	230.7			40.1	126.6	137.7			
1957	629.2	77.7	233.2			41.2	133.2	143.9			
1958	627.6	73.9	228.8			41.7	133.5	149.7			
1959	649.4	74.3	236.7			43.6	139.8	155.0			
1960	671.6	74.5	243.9	55.8	188.1	45.7	144.3	163.2			
1961	682.0	71.8	244.7	55.8	188.9	47.1	148.0	170.4			
1962	694.7	71.7	246.4	56.0	190.4	47.9	154.0	174.7			
1963	714.5	72.2	251.3	56.6	194.8	48.8	160.5	181.7			
1964	741.9	73.4	260.5	58.1	202.4	50.1	167.5	190.4			
1965	777.5	74.9	273.0	60.4	212.6	51.5	177.1	201.0			
1966	818.6	75.7	288.0	63.6	224.4	52.4	187.3	215.2			
1967	855.1	75.8	298.0	66.0	232.1	54.3	196.7	230.3			
1968	893.5	76.8	308.7	66.9	241.7	56.2	207.2	244.6			
1969	935.0	79.6	321.6	67.4	254.2	58.8	219.7	255.3			
1970	965.0	80.9	327.4	68.0	259.4	60.5	230.7	265.5			
1971	982.6	80.6	332.1	67.3	264.8	61.4	238.3	270.2			
1972	1020.0	81.9	346.9	77.1	269.4	64.2	251.2	275.8			
1973	1059.3	84.1	364.4	81.3	283.1	68.2	266.3	276.3			
1974	1088.8	85.1	374.3	85.7	288.7	71.8	280.7	276.9			
1975	1106.5	81.7	374.7	84.2	290.5	74.5	290.2	285.4			
1976	1139.4	82.6	388.8	86.8	302.0	77.0	302.4	288.6			
1977	1182.7	85.4	410.2	90.2	319.6	81.0	319.0	287.1			
1978	1236.2	88.4	426.6	93.3	333.3	85.7	337.3	298.2			
1979	1285.7	92.2	441.2	96.4	344.8	90.3	351.9	310.1			
1980	1307.5	92.1	436.8	96.7	340.1	93.3	364.2	321.1	28.4	79.5	213.3
1981	1312.6	92.3	432.4	98.1	334.3	95.0	374.9	318.0	27.7	79.3	210.9
1982	1309.7	89.4	428.9	96.6	332.3	95.8	381.5	314.1	27.7	78.1	208.3
1983	1321.1	88.1	433.3	95.9	337.3	98.6	388.6	312.5	27.1	79.5	205.9
1984	1365.1	91.9	452.8	98.1	354.7	101.3	404.4	314.7	26.8	80.4	207.6
1985	1402.7	94.2	465.1	99.8	365.3	103.8	419.0	320.6	27.7	82.9	210.1
1986	1439.5	93.7	477.2	101.2	376.0	108.1	434.9	325.6	28.6	83.5	213.6
1987	1483.8	94.1	495.2	106.1	389.1	112.3	454.9	327.3	28.6	82.3	216.4
Projections to the Year 2000											
Mean	1741.6	99.4	569.4			131.5	575.1	366.2			
High	1894.0	103.0	605.7			143.8	643.2	398.3			
Low	1595.6	93.2	518.8			118.2	529.8	335.6			

Civilian Labor Force Projections

Age Groups	Labor Force 1980	Percent of 1980 Group	Labor Force 1987	Percent of 1987 Total	Annual Growth Rate 1980-1987	Labor Force 2000	Percent of 2000 Total	Annual Growth Rate 1987-2000
Total	2,261,000	100.0%	2,491,000	100.0%	1.4%	2,647,000	100.0%	0.5%
16-19	210,000	9.3%	191,000	7.7%	-1.4%	168,000	6.4%	-1.0%
20-24	352,000	15.6%	301,000	12.1%	-2.2%	270,000	10.2%	-0.8%
25-34	606,000	26.8%	719,000	28.9%	2.5%	580,000	21.9%	-1.6%
35-44	412,000	18.2%	565,000	22.7%	4.6%	753,000	28.5%	2.2%
45-54	354,000	15.6%	385,000	15.5%	1.2%	586,000	22.1%	3.3%
55-64	259,000	11.5%	262,000	10.5%	0.2%	240,000	9.1%	-0.7%
65 +	67,000	3.0%	68,000	2.7%	0.1%	50,000	1.9%	-2.3%
Men	1,299,000	100.0%	1,384,000	100.0%	0.9%	1,419,000	100.0%	0.2%
16-19	109,000	8.4%	98,000	7.1%	-1.6%	85,000	6.0%	-1.1%
20-24	189,000	14.5%	157,000	11.3%	-2.6%	141,000	9.9%	-0.8%
25-34	356,000	27.4%	405,000	29.3%	1.9%	309,000	21.8%	-2.1%
35-44	239,000	18.4%	314,000	22.7%	4.0%	398,000	28.1%	1.8%
45-54	208,000	16.0%	213,000	15.4%	0.3%	323,000	22.7%	3.2%
55-64	156,000	12.0%	158,000	11.4%	0.1%	137,000	9.7%	-1.1%
65 +	42,000	3.2%	40,000	2.9%	-0.6%	26,000	1.9%	-3.1%
Women	962,000	100.0%	1,107,000	100.0%	0.9%	1,228,000	100.0%	0.8%
16-19	101,000	10.5%	93,000	8.4%	-1.2%	83,000	6.8%	-0.8%
20-24	163,000	17.0%	144,000	13.0%	-1.8%	129,000	10.5%	-0.8%
25-34	250,000	26.0%	314,000	28.4%	3.3%	271,000	22.1%	-1.1%
35-44	173,000	18.0%	251,000	22.7%	5.4%	355,000	28.9%	2.7%
45-54	145,000	15.1%	172,000	15.5%	2.4%	263,000	21.4%	3.3%
55-64	103,000	10.7%	104,000	9.4%	0.2%	103,000	8.4%	-0.1%
65 +	26,000	2.7%	28,000	2.5%	1.2%	24,000	1.9%	-1.3%
Total	2,261,000	100.0%	2,491,000	100.0%	1.4%	2,647,000	100.0%	0.5%
Men	1,299,000	57.5%	1,384,000	55.6%	0.9%	1,419,000	53.6%	0.2%
Women	962,000	42.5%	1,107,000	44.4%	2.0%	1,228,000	46.4%	0.8%

Sources

Labor Force 1980 from 1980 U.S. Census

Labor Force 1987 from Current Population Survey

Labor Force 2000 from DILHR LMI Projections

Labor Force Participation Rates, Men

by Age Group, U.S. & Wisconsin (%)

Year	16 - 19		20 - 24		25 - 34		35 - 44		45 - 54		55 - 65		65 & Over	
	US	Wis	US	Wis	US	Wis	US	Wis	US	Wis	US	Wis	US	Wis
1950	63.2	54.2	87.9	84.2	96.0	94.0	97.6	96.1	95.8	93.9	86.9	86.2	45.8	42.7
	63.0		88.4		96.9		97.5		95.9		87.2		44.9	
	61.3		88.1		97.5		97.8		96.2		87.5		42.6	
	60.6		87.7		97.4		98.2		96.5		87.9		41.6	
	58.6		87.0		97.3		98.1		96.5		88.7		40.5	
	58.9		86.8		97.6		98.1		96.5		87.9		39.6	
	60.5		87.8		97.3		97.9		96.5		88.5		40.0	
	59.2		87.0		97.1		97.9		96.3		87.5		37.5	
	56.5		86.9		97.1		97.9		96.3		87.8		35.6	
	55.8		88.8		97.4		98.8		96.0		87.4		34.2	
1960	56.1	54.1	88.1	80.0	97.5	95.3	97.7	96.5	95.7	95.2	86.8	87.2	33.1	30.1
	54.6		87.8		97.5		97.6		95.6		87.3		31.7	
	53.8		86.9		97.2		97.6		95.6		86.2		30.3	
	52.9		86.1		97.1		97.5		95.7		86.2		28.4	
	52.4		86.1		97.3		97.3		95.7		85.6		28.0	
	53.8		85.8		97.3		97.3		95.6		84.6		27.9	
	55.3		85.1		97.3		97.2		95.3		84.5		27.5	
	55.6		84.4		97.2		97.3		95.2		84.4		27.1	
	55.1		82.8		96.9		97.1		94.9		84.3		27.3	
	55.9		82.8		96.7		96.9		94.6		83.4		27.2	
1970	56.1	51.4	83.3	80.0	96.4	95.3	96.9	96.4	94.2	94.7	83.0	84.0	26.8	25.2
	56.1		83.0		96.0		96.5		93.9		82.2		25.5	
	58.1		83.9		95.7		96.4		93.2		80.5		24.4	
	59.8		85.3		95.7		96.2		93.0		78.3		22.8	
	60.8		86.0		95.9		96.0		92.2		77.4		22.4	
	59.2		84.6		95.3		95.6		92.1		75.8		21.7	
	59.4		85.2		95.3		95.4		91.6		74.5		20.3	
	61.1		85.7		95.4		95.7		91.2		74.0		20.1	
	62.1		86.0		95.4		95.7		91.3		73.5		20.5	
	61.7		86.6		95.4		95.8		91.4		73.0		20.0	
1980	60.5	58.0	85.9	84.1	95.2	94.5	95.5	95.9	91.2	93.3	72.1	75.5	19.0	17.8
	59.0		85.5		94.9		95.4		91.4		70.6		18.4	
	56.7		84.9		94.7		95.3		91.2		70.2		17.8	
	56.2		84.8		93.8		95.2		91.2		69.4		17.4	
	56.0		85.0		93.9		95.4		91.2		68.5		16.3	
	56.8		85.0		93.9		95.0		91.0		67.9		15.8	
	56.4		85.8		93.8		94.8		91.0		67.3		16.0	
	56.1		85.2		93.7		94.6		90.7		67.6		16.3	
1990														
2000	60.2	58.2	87.5	85.9	93.6	92.6	93.9	93.9	90.1	91.1	63.2	64.2	9.9	9.6

Labor Force Participation Rates, Women

by Age Group, U.S. & Wisconsin (%)

Year	16 - 19		20 - 24		25 - 34		35 - 44		45 - 54		55 - 65		65 & Over	
	US	Wis	US	Wis	US	Wis	US	Wis	US	Wis	US	Wis	US	Wis
1950	41.0	37.3	46.0	47.4	34.0	30.2	39.1	33.9	37.9	32.3	27.0	23.2	9.7	8.0
	42.4		46.5		35.4		39.8		39.6		27.6		8.9	
	42.1		44.7		35.4		40.4		40.1		28.7		9.1	
	40.7		44.3		34.0		41.3		40.4		29.1		10.0	
	39.4		45.1		34.4		41.2		41.1		30.1		9.3	
	39.7		45.9		34.9		41.6		43.8		32.5		10.6	
	42.2		46.3		35.4		43.1		45.5		34.9		10.8	
	41.1		45.9		35.6		43.3		46.5		34.5		10.5	
	39.0		46.3		35.6		43.4		47.8		35.2		10.3	
	38.2		45.1		35.3		43.3		49.0		36.6		10.2	
1960	39.4	38.6	46.1	45.9	36.0	32.5	43.4	40.7	49.8	46.9	37.2	35.6	10.8	10.8
	39.7		47.0		36.4		43.8		50.1		37.9		10.7	
	38.0		47.3		36.3		44.1		50.0		38.7		9.9	
	38.0		47.5		37.1		44.9		50.6		39.7		9.6	
	37.1		49.4		37.2		45.0		51.4		40.2		10.1	
	38.0		49.9		38.5		46.1		50.9		41.1		10.0	
	41.4		51.4		39.8		46.9		51.7		41.8		9.6	
	41.6		53.3		41.9		48.1		51.8		41.8		9.6	
	41.9		54.5		42.6		48.9		52.3		42.4		9.6	
	43.3		56.7		43.7		49.9		53.8		43.1		9.9	
1970	44.4	41.9	57.7	59.6	45.0	44.2	51.1	50.7	54.4	54.3	43.0	44.6	9.7	10.6
	43.5		57.7		45.5		51.6		54.3		42.9		9.5	
	45.8		59.0		47.6		52.0		53.9		42.1		9.3	
	47.8		61.1		50.1		53.3		53.7		41.1		8.9	
	49.2		63.0		52.4		54.7		54.6		40.7		8.2	
	49.1		64.1		54.6		55.8		54.6		41.0		8.3	
	49.9		65.0		57.1		57.8		55.0		41.1		8.2	
	51.4		66.5		59.5		59.6		55.8		41.0		8.1	
	53.9		68.3		62.1		61.6		57.1		41.4		8.4	
	54.5		69.1		63.8		63.6		58.4		41.9		8.3	
1980	52.9	54.6	68.9	72.4	65.5	67.1	65.5	68.5	59.9	63.3	41.3	44.9	8.1	7.8
	51.9		69.6		66.7		66.8		61.1		41.4		8.0	
	52.9		69.8		66.3		68.0		61.6		41.8		8.1	
	50.8		69.9		67.1		68.7		61.9		41.5		7.8	
	51.8		70.4		68.2		70.1		62.9		41.7		7.5	
	52.1		71.8		69.6		71.8		64.4		42.0		7.3	
	53.0		72.4		70.8		73.1		65.9		42.3		7.4	
	53.3		73.0		71.9		74.5		67.1		42.7		7.4	
1990														
2000	59.2	58.2	78.4	80.4	78.4	80.4	82.3	84.2	75.4	75.4	45.8	46.0	5.4	5.6

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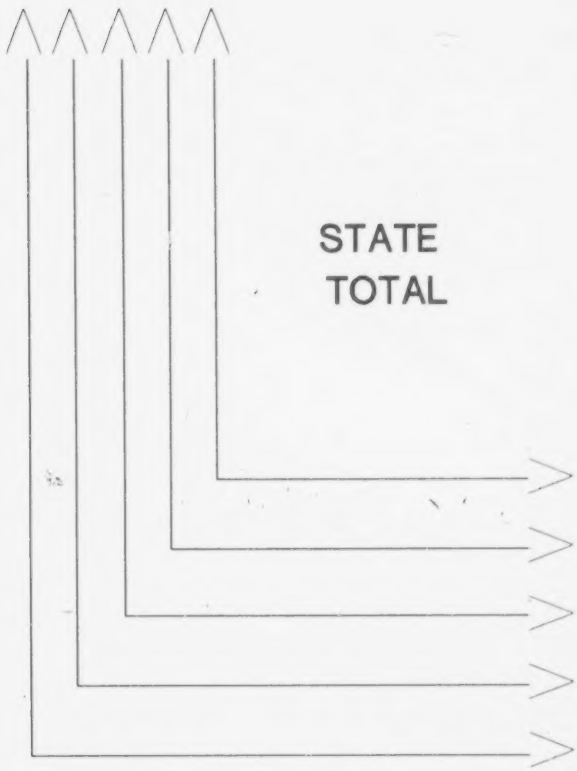
WISCONSIN OCCUPATIONAL PROJECTIONS TO 2000



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WISCONSIN DEPARTMENT OF
INDUSTRY, LABOR & HUMAN RELATIONS

Wisconsin Occupational Projections to 2000

Related LMI Publications:

- *Wisconsin Industry Projections to 2000*

- *Planning Information for Employment, Training and Industry Development (PIETID)*

Prepared by:
Bureau of Labor Market Information
Division of Employment and Training Policy
Department of Industry, Labor and Human Relations
July 1989

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Executive Summary

As Wisconsin looks to the year 2000, many questions and issues confront our state's residents. Not the least of these issues revolve around the labor force and the number of people who will be employed, the requirements of various industries, and the occupations of people in those industries.

Projections of occupational employment presented in this report are intended to provide people in business, educators, and public planners with estimates of the numbers of teachers, brick layers, accountants, and 700 other occupations which Wisconsin's economic enterprises will need in the year 2000. In other forms, these projections will be used by both adults and students in planning their careers.

These new occupational projections to the year 2000 show that trends observed in the past several years will continue. The greatest number of job opportunities will be in Production, Operative and Maintenance occupations, primarily to replace those that leave the labor force. The fastest growth is found in the small group of Agricultural, Forestry and Fisheries occupations employed in the Agricultural Services industry.

The largest growth in jobs will be in Service and in Professional, Paraprofessional and Technical occupations. Job openings due to growth and separations from the labor force in these two groups of occupations are estimated to be about 42,000 per year from 1986 to 2000.

Changes in occupational employment go hand-in-hand with changes in industry employment and changes in the characteristics of the labor force. A related report, *Wisconsin Industrial Projections to 2000* provides estimates of industry employment and of the labor force in the year 2000. Please refer to that report for a discussion of

- ☐ the potential for labor shortages,
- ☐ the aging of the labor force,
- ☐ the continued growing share of the labor force that will be women,
- ☐ the industry growth trends.

The process for determining occupational projections was developed by the Department of Labor in conjunction with the cooperating state agencies. The Bureau of Labor Market Information in the Wisconsin Department of Industry, Labor and Human Relations, Employment and Training Policy Division produces this data for the state in Wisconsin. The procedure requires the involvement and cooperation of state and private economists, writers, analysts, and planners.

Trends used are based on nonfarm wage and salary employment and the Occupational Employment Statistics survey. For the first time the occupational projections include self-employed and unpaid family workers. This addition to include total employment in the occupations should enhance the value of these projections.

Chapter 1: Industry Trends

Occupations occur in industries. An occupation is an activity. It is what a person does for a living. An industry is a group of organizations that use tools and raw materials to produce goods and services. As an illustration, Nursing is an occupation, and Health Services is an industry group producing health care. The future need for nurses will depend upon changing demands for health care and changes in the health services industry.

Industries employ workers in varying combinations of occupations. Approximately 70 percent of the workers in manufacturing are in production occupations and less than 10 percent are in professional occupations. In the service industry, by contrast, over 40 percent of the workers are in professional occupations. Thus, different rates of industry growth cause different patterns of occupational growth.

Industries are sometimes grouped into two sectors; goods producing and service producing.

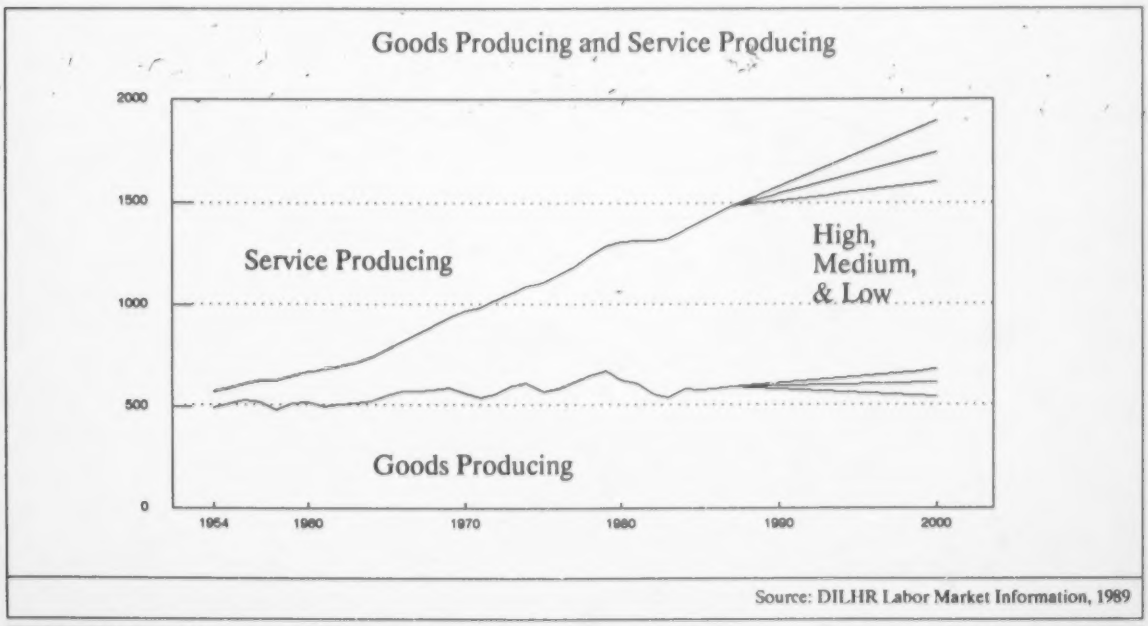
For the past 35 years, employment in service producing industries in Wisconsin, as in the nation, has grown faster than employment in goods producing industries. This trend is expected to continue.

The largest goods producing industry in Wisconsin is manufacturing. Manufacturing is the largest industry in Wisconsin, employing one out of every five workers.

The long term trend in manufacturing employment is one of very slow growth. Projected continued slow growth in manufacturing employment will limit growth of production worker employment, but because the industry is huge, a large number of production workers will still be needed to replace people leaving the labor force.

The three other goods producing industries are construction, mining, and agriculture, forestry and fisheries. The agriculture, forestry and fisheries industry is not included in these projections, and mining is a very small industry in Wisconsin.

The construction industry employs many workers in skilled trades occupations. Low growth is projected, so most demand in the construc-



Source: DILHR Labor Market Information, 1989

tion skilled trades will be to replace labor force separations.

The largest service producing industry is services. The service industry should neither be confused with the service-producing sector nor the service occupations. The service industry includes hotels and lodging places; personal and household services; business and repair services; amusement and recreation services; health services; educational and professional services; and social services and membership organizations.

The service industry is projected to experience the fastest growth. By the year 2000, service industry employment will be larger than manufacturing employment. Rapid growth in this industry will cause growth in the professional, technical, and service occupations .

Other service producing industries include transportation, communication and public utilities; finance, insurance and real estate; wholesale and retail trade; and government.

Slow growth in the transportation, communication and public utilities industry will cause slow growth in occupations involved in the movement of people, data and power.

Above average growth in the finance, insurance and real estate industry will add to demand for the professional, sales, and clerical occupations found in this industry.

Above average growth in the wholesale and retail trade industries will create jobs for many workers in sales and food service occupations.

Government work includes large numbers of professional and clerical staff, who deal with data and people. Government employment will continue to grow, but at a slower pace than the previous 33 years. This will slow future growth in some professional and administrative support occupations.

Industry Employment
Wisconsin 1987 to 2000

Industry	Estimated Employment 1987	2000	Percentage Change
Construction	67,400	71,100	5.5
Manufacturing	526,400	547,100	3.9
Transportation and Utilities	94,100	99,400	5.6
Wholesale and Retail Trade	495,200	569,400	15.0
Finance, Insurance and Real Estate	112,300	131,500	17.1
Services	454,900	575,100	26.4
Government	327,300	366,200	11.9

Source: DILHR Labor Market Information, 1989

Chapter 2: Occupational Trends

There are four factors which that are important in determining the occupations of the future.

The first is the growth of a specific industry. Some employment in any occupation can be found in almost every industry, but there is a great variation in the percentage of the total employment in an occupation that is in each industry. As an example, most employment in production work occupations is in the manufacturing industry, so growth in manufacturing industry employment is an important component of growth in production work occupations. This industry growth was discussed in the Chapter 1.

Second, technology and management decisions cause changes in the distribution of occupations within an industry. As an example, computer aided drafting is decreasing the number of people employed in the drafting occupation. Analysts in the Bureau of Labor Statistics provided estimates used in processing these projections to account for the change in the occupational distribution of employment within industries.

A third factor is new occupations that will come into existence. We cannot project some of these new occupations because they have not been invented yet. As an example, the relationship between authors and their support people is changing and a new administrative support occupation and title could develop.

Most change requiring new duties and different training will occur within an occupation and the title of the occupation will not change. As an example, today we may still call the occupation "typist" but the typist may no longer use a typewriter and the duties may be totally different. The projected number of typists does not tell us about the changes occurring within the occupation.

The fourth factor to be considered is that job openings are created every day by workers leaving their jobs. This factor does not change the number employed in the occupation. It is, however, an important consideration in determining opportunities for employment in the occupations. Labor force separations include persons who retire, die or leave the labor force for other reasons, such as disability or family responsibilities minus the number who return to the labor force after leaving for one of these reasons. These separations create the need for more workers trained in the occupation. In addition there are other forms of turnover not included in these projections, such as a person changing occupations or geographic location, which may create opportunities for employment and a need for training.

The first two factors are reflected in the projections of occupational growth, that is the number of new jobs that will be added. The third factor, changes within the occupation, requires an analysis of job content that is not part of this study. The fourth factor is reflected in the projections of labor force separations, that is the job openings that will be created because of net separations from the labor force.

Growth to the year 2000 is projected to add 25,000 jobs per year to the Wisconsin economy. Another 77,000 educated and trained workers will be required to replace labor force separations each year. Employment has been growing more slowly in the midwest than for the nation as a whole, and the projected Wisconsin growth is a little less than the national projection developed by the Bureau of Labor Statistics.

As shown in the Major Occupational Category table, Agriculture, Forestry and Fishing is the fastest growing occupational group with a 26 percent growth rate. This group of occupations will have the smallest numerical growth because the current employment is small compared to the other major groups.

Professional, Paraprofessional and Technical occupations is projected to have the second fastest growth, 23 percent by the year 2000,

and will have the largest annual numerical growth.

Sales and Related Occupations and Service Occupations are projected to have a 22 percent growth by the year 2000 and to add a large number of jobs.

Growth in Managerial and Management Related occupations is projected to be only a little above average, 17 percent between 1986 and 2000.

Clerical and Administrative Support occupations will grow about 12 percent, well below the average growth projected for all occupations.

Production, Operatives, and Maintenance occupations will grow at the slowest rate, only 8 percent. This is the largest occupational group so that even at this slower rate over 54,000 jobs will be added.

Employment by Major Occupational Category
Wisconsin 1986 to 2000

Occupation Title	Estimated Employment		Change	
	1986	2000	Percentage	Numeric
Total of all Occupations	2,181,570	2,536,690	16.2	355,122
Managerial and Management Related	148,220	173,690	17.2	25,467
Professional, Paraprofess., and Technical	408,990	504,120	23.3	95,136
Sales and Related	228,470	279,830	22.4	51,363
Clerical & Administrative Support	339,440	379,080	11.7	39,640
Service	379,180	463,290	22.2	84,108
Agriculture, Forestry, and Fishing	18,760	23,680	26.2	4,916
Production, Operations, and Maintenance	658,510	713,010	8.3	54,492

Source: DILHR Labor Market Information, 1989

Chapter 3: Views of Occupational Demand

There area several ways to look at changes in occupational employment. The following six views each provide different insights into the interpretation of the projections.

Greatest Expected Employment

Occupations with the Greatest Employment in Year 2000
Wisconsin 1986 to 2000

Occupation Title	Estimated Employment		Percentage Change
	1986	2000	
Salespersons, Retail	67260	86350	28.38
General Secretaries	49980	59070	18.19
General Managers and Top Exec.	46450	56020	20.60
Waiters and Waitresses	45300	55290	22.07
Janitors and Cleaners, Exc.Maids	44340	53810	21.35
General Office Clerks	44760	52060	16.32
Cashiers	39700	48640	22.53
Registered Nurses	31200	44520	42.68
Nursing Aides and Orderlies	35040	42960	22.61
Bookkeeping & Accounting Clerks	41730	41800	0.16
Bartenders	30610	37200	21.53
Sales Reps.Exc.Scientif & Retail	31370	36920	17.67
Teachers, Secondary School	30240	35370	16.95
Teachers, Elementary	27630	31850	15.31
Truck Drivers, Heavy	28540	31390	9.99
Hairdressers and Cosmetologists	19210	25130	30.83
Stock Clerks, Sales Floor	21700	25060	15.52
Food Preparation Workers	20340	24110	18.53
Maintenance Repairers, Gen.Util.	19530	23610	20.89
Hand Packers and Packagers	17940	20010	11.55

Source: DILHR Labor Market Information, 1989

Looking at occupational demand in terms of the projected total employment in the year 2000, shows great stability - not dramatic change.

This list ranks the occupations that will have the most employment in the year 2000. There will be little change in ranking between 1986 and 2000. Bookkeeping and Accounting Clerks are expected to drop from seventh to tenth place in the ranking with almost no employment growth due to increased use of computers. Registered Nurses are expected to move from eleventh to eighth in the ranking as demand for these services grows. In general, however, the occupations with the largest employment in 1986 will still be the largest in the year 2000.

Fastest Growing

Fastest Growing Occupations
Wisconsin 1986 to 2000
Occupations with 500 + Employment

Occupation Title	Estimated Employment		Percentage Change
	1986	2000	
Medical Records Techn.& Technol.	1171	1971	68%
Computer Systems Analysts, Edp	5116	8315	63%
Paralegal Personnel	795	1288	62%
Physical Therapists	1288	2026	57%
Data Processing Equip. Repairers	682	1047	54%
Electrical & Electronic Engineer	3196	4862	52%
Occupational Therapists	866	1313	52%
Surgical Technicians	871	1297	49%
Electrical & Electronic Techns.	3854	5660	47%
Industrial Engineers, Exc. Safety	2109	3052	45%
Physical, Correct.Therapy Assist	714	1031	44%
Registered Nurses	31200	44515	43%
Offset Lithographic Press Setter	1962	2791	42%
Mechanical Engineers	4651	6605	42%
Peripheral Edp Equip. Operators	653	911	40%
Medical Assistants	2302	3207	39%
Respiratory Therapists	962	1333	39%
Dental Hygienists	2018	2790	38%
Employment Interviewers	3546	4864	37%
Directors, Religious Activ./Educ.	1268	1734	37%

Source: DILHR Labor Market Information, 1989

The occupations which grow by the greatest percent do so usually because they have a small number of people employed at the outset. The fastest growing occupations may not add a large number of new jobs. If an arbitrary cutoff of an increase of 200 jobs per year were made, the three remaining rapidly growing occupations would be computer systems analysts, registered nurses, and gardeners and groundskeepers. This table shows the most rapidly growing occupations which currently employ 500 or more workers.

A rapid rate of growth means that a similar rapid growth in training may be needed to supply the workers. Of the 20 occupations, 18 require either associate degree certification or bachelor degrees. Almost half of these occupations are in the expanding medical field.

Fastest Declining

Fastest Declining Occupations Wisconsin 1986 to 2000 Occupations with 500 + Employment			
Occupation Title	Estimated Employment		Percentage Change
	1986	2000	
Electrical, Electronic Assembler	8720	4700	-46.17
Shoe Sewing Machine Operator	500	330	-33.33
Industrial Truck & Tractor Oper.	11390	7860	-31.01
Stenographers	2520	1810	-28.08
Painters, Transportation Equip.	520	390	-25.15
Data Entry Keyers, Ex. Composing	7110	5460	-23.17
Statistical Clerks	750	580	-21.98
Shipfitters	620	500	-19.45
Shoe and Leather Workers	870	730	-16.17
Payroll and Timekeeping Clerks	4030	3430	-14.81
Textile Machine Operators	750	640	-14.06
Optometrists	900	790	-13.16
Precision Compositor, Typesetter	510	440	-12.94
Meter Readers, Utilities	980	870	-10.63
Farm Equipment Mechanics	3190	2910	-8.78
Insurance Policy Process. Clerks	3260	3010	-7.72
Farm & Home Management Advisors	660	610	-7.56
Telephone & Cable TV Instal/Rpr.	2180	2030	-7.10
Sewing Mach. Operator, Garment	3270	3060	-6.46
Furnace Operators and Tenders	770	720	-6.13

Source: DILHR Labor Market Information, 1989

These are the occupations that are expected to have fewer employees in the year 2000 than in 1986. Their rate of decline is shown as a negative percent change In all but three of these occupations the reductions could occur through normal separations due to death and retirement.

Since these occupations are decreasing, the need for training is decreasing. Some training is, however, still needed. The number of trained workers needed to replace labor force separations for bookkeepers is greater than the number of trained workers needed for most of the fastest growing occupations. (See detailed occupational tables.)

Greatest Numerical Growth

Occupations Adding the Most Workers in Year 2000 Wisconsin 1986 to 2000			
Occupation Title	Estimated Employment		Numeric Change
	1986	2000	
Salespersons, Retail	67260	86350	19090
Registered Nurses	31200	44520	13315
Waiters and Waitresses	45300	55290	9996
General Managers and Top Exec.	46450	56020	9570
Janitors and Cleaners, Exc.Maids	44340	53810	9468
General Secretaries	49980	59070	9090
Cashiers	39700	48640	8942
Nursing Aides and Orderlies	35040	42960	7922
General Office Clerks	44760	52060	7303
Bartenders	30610	37200	6589
Hairdressers and Cosmetologists	19210	25130	5923
Sales Reps.Exc.Scientif & Retail	31370	36920	5545
Teachers, Secondary School	30240	35370	5126
Accountants and Auditors	15060	19940	4877
Teachers, Elementary	27630	31850	4229
Maintenance Repairers, Gen.Util.	19530	23610	4080
Food Preparation Workers	20340	24110	3770
Licensed Practical Nurses	12010	15750	3747
Gardeners and Groundskeepers	10120	13790	3661
Stock Clerks, Sales Floor	21700	25060	3367

Source: DILHR Labor Market Information, 1989

These are the occupations that will provide the most new jobs by the year 2000. What is most noteworthy about these occupations is that they are jobs common in the economy. Many are entry level and require little post secondary training. The most numerical growth will not be in some exotic new high technology occupations although new technological tools will be used in some of these jobs.

Most Annual Openings

Occupations with the Most Job Openings Wisconsin 1986 to 2000			
Occupation Title	Annual Job Growth	Labor Force Separations *	Total Annual Job Openings
Salespersons, Retail	1364	3802	5166
Janitors and Cleaners, Exc.Maids	676	3534	4210
General Managers and Top Exec.	684	2116	2800
General Office Clerks	522	1830	2352
General Secretaries	649	1510	2159
Bartenders	471	1414	1885
Registered Nurses	951	905	1856
Nursing Aides and Orderlies	566	1287	1853
Sales Reps.Exc.Scientif & Retail	396	1383	1779
Bookkeeping & Accounting Clerks	5	1733	1738
Cashiers	639	1029	1668
Stock Clerks, Sales Floor	241	1120	1361
Waiters and Waitresses	714	644	1358
Maids and Housekeeping Cleaners	238	987	1225
Food Preparation Workers	269	936	1205
Gardeners and Groundskeepers	262	799	1061
Teachers, Elementary	302	758	1060
Maintenance Repairers, Gen.Util.	291	742	1033
Guards and Watch Guards	161	867	1028
Teachers, Secondary School	366	646	1012

Source: DILHR Labor Market Information, 1989

* Persons who die or leave the labor force for other reasons such as continuing education, minus the number who return to the labor force after leaving it.

These are the occupations that will offer the most job opportunities due to combined growth and separations. Replacing labor force separations will be the primary source of openings in Bookkeeping and Accounting Clerks. Most of these jobs will add more workers to replace labor force separations than to accommodate growth.

The jobs with the most annual openings are not the high technology jobs that appear in the headline news. They are simply the jobs with the most opportunities for the most people.

Self-Employed In Year 2000

Occupations with the Greatest Self-Employed in Year 2000
Wisconsin 1986 to 2000
Occupations with 500 + Employment

Occupation Title	Self-Employment		Percentage Change
	1986	2000	
Hairdressers and Cosmetologists	8747	11308	29.27
Sales Reps.Exc.Scientif & Retail	8073	9675	19.84
Child Care Workers	7025	8198	16.69
Carpenters	6411	6898	7.59
First Line Supervisors, Sales	3868	4674	20.83
Instructors, Nonvocational Educ.	3828	4575	19.51
Salespersons, Retail	3046	4270	40.18
Barbers	2724	3840	40.96
Painters and Paperhangers	3105	3474	11.88
Food Service & Lodging Managers	3624	3296	-9.05
Automotive Mechanics	3630	3203	-11.76
Gardeners and Groundskeepers	1716	2779	61.94
Industrial Production Managers	2466	2665	8.06
Sales Reps,Scientif.Prod.Exc.Ret	2207	2642	19.71
Bookkeeping & Accounting Clerks	2643	2534	-4.12
Insurance Sales Workers	2010	2456	22.18
Salespersons, Parts	1850	2299	24.27
Artists and Related Workers	1875	2271	21.12
Janitors and Cleaners, Exc.Maids	1808	2158	19.35
Lawyers	2683	1955	-27.13
Bartenders	1778	1872	5.28
Engineer., Math., Nat. Sci. Mgr.	1506	1662	10.35
Physicians and Surgeons	2302	1607	-30.19
Designers, Exc. Interior Design.	1307	1588	21.49
Automotive Body,Related Repairer	1393	1553	11.48
Accountants and Auditors	1433	1548	8.02
Writers and Editors	1083	1392	28.53
Administrative Services Manager	1127	1345	19.34
Dentists	1515	1327	-12.40
Communication,Transp.,Util.Mgrs	1136	1244	9.50
Photographers	986	1236	25.35
Medicine and Health Serv. Mgrs	952	1225	28.67
Cooks, Restaurant	908	1206	32.81
Construction Managers	1128	1197	6.11
First Line Superv.: Production	1110	1150	3.60
Plumber, Pipefitter, Steamfitter	986	1140	15.61
Custom Tailors and Sewers	1033	1122	8.61
Psychologists	941	1103	17.21
Musicians, Instrumental	756	1042	37.83
Maintenance Repairers, Gen.Util.	789	954	20.91

Source: DILHR Labor Market Information, 1989

This is the first time that we have been able to include self-employed in the occupational projections. These are some of the occupations that a person might want to consider if they were going into business for themselves.

The four occupations with the largest number of self-employed workers are no surprise. They are hairdressers and cosmetologists, sales representatives, child care workers, and carpenters.

Some of the other occupations with large numbers of self-employed workers are more surprising. But, the owner of a small business may be self-employed and employ wage and salary workers. This explains some of the occupations such as the first line supervisor, sales. Some of the others, such as engineers, scientists and mathematicians work as consultants or provide contract services.

The rapid growth of gardeners and groundskeepers is explained by the rapid expansion in lawn care services. Barbers are projected to grow faster than hairdressers and cosmetologists because of women are becoming barbers instead of hairdressers. The decrease in self-employed lawyers and physicians and surgeons is probably due to the increasing competition from clinics and other organizations that provide both general services and specialists.

The growth projection used for these self-employed workers is based upon growth in the industry and upon special analysis by the Bureau of Labor Statistics of the changing distribution of occupations within the industry and in the relations between self-employment and wage and salary employment. The projected growth rates for the self-employed are not the same as the rates projected for wage and salary workers in the same occupation. This self-employment growth is included in the other tables for these occupations.

Chapter 4: Detailed Occupational Trends

The tables in this chapter present occupational projections for the 719 occupations surveyed. These occupations are divided into eight major occupational groups. Annual average openings due to both growth and labor force separations are shown. An asterisk "*" is displayed when employment of less than ten was reported.

Managerial and Management Related Occupations

Managerial and Management Related occupations will be affected by two opposing trends. Use of computers and new philosophies of management is reducing the number of middle managers in many firms and slowing the growth in the total number of middle management positions. At the same time the growth in the number of smaller businesses is increasing the number of managers.

By far the largest number are General Managers and Top Executives and this group will account for roughly a third of the total growth in managerial employment. Financial managers form another large occupation because they are found in almost every industry.

Managerial and Management Related Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Total, All Occupations	2181570	2536690	355122	16.28	25389	77183	102572
Managerial and Mgt, Related Occ.	148220	173690	25467	17.18	1820	6444	8264
Financial Managers	13310	15500	2189	16.45	156	412	568
Personnel,Training,Labor Rel.Mgr	2780	3450	675	24.29	48	98	146
Purchasing Managers	5790	6290	500	8.64	36	175	211
Marketing, Adv., Public Rel.Mgrs	7250	9250	1994	27.49	142	228	370
Administrative Services Manager	3850	4560	715	18.58	51	174	225
Engineer., Math., Nat. Sci. Mgr.	5150	5640	495	9.62	35	223	258
Postmasters, Mail Superintendent	970	1100	133	13.74	10	74	84
Education Administrators	4590	5350	763	16.63	55	187	242
Medicine and Health Serv. Mgrs	3250	4160	905	27.82	65	132	197
Property, Real Estate Management	650	870	222	34.21	16	72	88
Industrial Production Managers	8420	9050	622	7.38	44	361	405
Construction Managers	3850	4060	208	5.40	15	163	178
Mining and Related Managers	140	140	-5	-3.50	0	6	6
Communication,Transp.,Util.Mgrs	3880	4220	341	8.79	24	167	191
Food Service & Lodging Managers	9220	10290	1075	11.67	77	403	480
Public Admin., Leg., Gen. Admin.	5350	6010	660	12.35	47	399	446
General Managers and Top Exec.	46450	56020	9570	20.60	684	2116	2800
All Other Managers & Administ.	23330	27740	4405	18.88	315	1054	1369

Source: DILHR Labor Market Information, 1989

Professional, Paraprofessional and Technical Occupations

Rapid growth is projected to 2000 for computer systems analysts, paralegal personnel, registered nurses, several kinds of medical technicians and health care therapists, and engineers and engineering technicians.

There is a pattern of projected growth in the use and creation of high technology and in the provision of services, particularly health services. Much of the growth appears to be related to information processing, or application of biological or physical sciences.

Professional, Paraprofessional, and Technical Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Professional, Paraprofess.,Tech.	408990	504120	95136	23.26	6807	12432	19239
Management Support Occupations	22910	29740	6825	29.79	488	721	1209
Underwriters	2020	2630	612	30.37	44	39	83
Credit Analysts	1080	1330	248	22.92	18	33	51
Loan Officers and Counselors	1810	2400	585	32.27	42	68	110
Tax Preparers	460	610	142	30.67	10	17	27
Accountants and Auditors	15060	19940	4877	32.39	348	479	827
Budget Analysts	960	1080	122	12.68	9	33	42
All Other Financial Specialists	1520	1760	239	15.77	17	52	69
Purchasing Agents and Buyers	9000	9450	446	4.96	31	375	406
Wholesale, Retail Buyers,Ex.Farm	4880	4990	103	2.11	7	203	210
Purchasing Agents & Buyers, Farm	560	660	100	18.02	7	51	58
Purchasing Agent Ex.Who/Ret/Farm	3560	3810	243	6.82	17	121	138
Personnel Specialists & Related	7230	9360	2124	29.37	152	175	327
Claims Takers, Unemploy.benefits	150	170	16	10.60	1	3	4
Special Agents, Insurance	430	520	91	21.41	7	10	17
Employment Interviewers	3550	4860	1318	37.17	94	89	183
Personnel,Train.,Labor Rel. Spec	3110	3810	699	22.48	50	73	123
Other Management Support Occ.	13970	16050	2077	14.87	150	371	521
Cost Estimators	3640	4220	579	15.90	41	59	100
Management Analysts	370	460	93	25.48	7	35	42
Construction, Building Inspector	740	800	62	8.38	4	44	48
Compliance & Enforce. Inspectors	1660	1850	189	11.39	14	59	73
Tax Examiner,Collector,Rev.Agent	970	1160	191	19.69	14	36	50
Assessors	1240	1380	133	10.69	10	44	54
Claims Examiners, Insurance	360	500	135	37.50	10	14	24
All Other Management Support Occ	4990	5690	695	13.93	50	80	130
Engineers, Architects, Surveyors	37500	47500	10005	26.68	715	925	1640
Engineers	15980	21550	5571	34.86	398	499	897
Aeronautical & Astro. Engineers	*	*	*	*	*	*	*
Metallurgists and Rel. Engineers	250	360	108	42.69	8	8	16

Professional, Paraprofessional, and Technical Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Mining Engineers, Inc. Safety	20	20	-2	-8.70	0	1	1
Petroleum Engineers	*	*	*	*	*	*	*
Chemical Engineers	370	460	97	26.43	7	10	17
Nuclear Engineers	60	60	6	10.71	0	2	2
Civil Engineers, Incl. Traffic	2490	3000	512	20.55	37	56	93
Agricultural Engineers	180	190	14	7.95	1	1	2
Electrical & Electronic Engineer	3200	4860	1666	52.13	119	90	209
Industrial Engineers,Exc. Safety	2110	3050	943	44.71	67	64	131
Safety Engineers, Except Mining	230	260	33	14.47	2	6	8
Mechanical Engineers	4650	6610	1954	42.01	140	187	327
Marine Engineers	80	90	14	18.42	1	2	3
All Other Engineers	2350	2580	226	9.61	16	72	88
Architects and Surveyors	1550	1910	363	23.48	25	58	83
Architects, Exc. Land. & Marine	1490	1830	342	22.98	24	56	80
Marine Architects	*	*	*	*	*	*	*
Landscape Architects	60	80	20	36.36	1	2	3
Surveying and Mapping Scientists	530	650	121	22.92	9	13	22
Surveying and Mapping Scientists	530	650	121	22.92	9	13	22
Engineering Technicians	19440	23390	3950	20.32	283	355	638
Civil Engineering Technicians	1610	1900	286	17.74	20	37	57
Electrical & Electronic Techns.	3850	5660	1806	46.86	129	51	180
Industrial Engineering Techn.	640	710	65	10.09	5	12	17
Mechanical Engineering Techn.	1150	1320	173	15.08	12	37	49
Drafters	6890	7770	878	12.75	63	114	177
Estimators & Drafters, Utilities	140	150	9	6.43	1	2	3
Surveying and Mapping Technician	960	1180	221	23.04	16	8	24
All Other Engineering Technician	4200	4710	512	12.19	37	94	131
Natural,Computer,Math Scientists	9370	10750	1383	14.76	100	179	279
Physical Scientists	2480	2860	378	15.25	27	66	93
Physicists and Astronomers	40	50	4	9.09	0	0	0
Chemists, Except Biochemists	1010	1160	156	15.52	11	18	29
Meteorologists	20	30	9	47.37	1	0	1
Geologist, Geophysicist, Oceanog	90	110	23	26.74	2	2	4
All Other Physical Scientists	1330	1510	186	14.04	13	46	59
Life Scientists	4010	4700	693	17.30	50	62	112
Forester, Conservation Scientist	660	750	86	13.05	6	13	19
Agricultural and Food Scientists	480	590	109	22.52	8	9	17
Biological Scientists	400	530	123	30.52	9	3	12
Medical Scientists	120	160	36	30.25	3	1	4

Professional, Paraprofessional, and Technical Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
All Other Life Scientists	2340	2680	339	14.49	24	36	60
Physical & Life Sci. Technicians	2880	3200	312	10.82	23	51	74
Biological, Agric., Food Techn.	550	590	42	7.71	3	15	18
Chemical Technicians, Exc.Health	1200	1310	108	9.01	8	20	28
All Other Science Technicians	1140	1300	162	14.22	12	16	28
Computer and Mathematical Occ.	14800	20260	5456	36.86	391	117	508
Computer and Related Occupations	13320	18320	4998	37.52	358	71	429
Computer Systems Analysts, Edp	5120	8320	3199	62.53	229	26	255
Computer Programmers	6300	7700	1395	22.14	100	34	134
Computer Programmer Aides	1610	1930	321	19.99	23	8	31
Programmers: Numerical, Tool	300	380	83	27.85	6	3	9
Mathematical and Related Occup.	1480	1940	458	30.95	33	46	79
Operations and Systems Analysts	370	530	156	42.28	11	13	24
Statisticians	90	120	26	27.96	2	4	6
Actuaries	280	400	122	44.36	9	1	10
Financial Analysts, Statistical	350	430	84	24.14	6	16	22
All Other Mathematical Scientist	280	330	45	16.01	3	10	13
Mathematical Technicians	110	140	25	21.93	2	2	4
Social Scientists,Recr.,Religion	22510	28640	6129	27.23	438	1021	1459
Social Scientists	3400	4050	646	18.98	46	63	109
Economists, Market Analysts	310	340	34	11.15	2	7	9
Urban and Regional Planners	330	380	48	14.59	3	2	5
Psychologists	2360	2850	497	21.10	36	45	81
All Other Social Scientists	410	480	67	16.22	5	9	14
Social, Recreation, Religion Occ	19110	24590	5483	28.70	392	958	1350
Social Worker, Med.& Psychiatric	3780	4790	1015	26.87	73	106	179
Social Workers, Ex. Med.& Psych.	4330	5190	859	19.82	61	118	179
Social Service Technicians	2560	3280	728	28.48	52	72	124
Recreation Workers	3520	4360	839	23.86	60	148	208
Clergy	3200	4640	1438	44.91	103	313	416
Directors,Religious Activ./Educ.	1270	1730	466	36.75	33	149	182
All Other Religious Workers	450	590	138	30.53	10	52	62
Law and Related Occupations	10810	12660	1852	17.13	132	680	812
Lawyers and Judges	8200	9160	960	11.71	68	528	596
Judges and Magistrates	530	590	59	11.11	4	57	61
Adjudicators & Hearing Officers	20	30	2	8.70	0	2	2
Lawyers	7640	8540	899	11.76	64	469	533
Legal Assistants and Technicians	2620	3510	892	34.11	64	152	216
Law Clerks	500	640	138	27.71	10	28	38

Professional, Paraprofessional, and Technical Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Paralegal Personnel	800	1290	493	62.01	35	52	87
Title Searchers	260	310	54	20.85	4	14	18
Title Examiners and Abstractors	380	460	80	21.22	6	21	27
All Other Legal Assistants	690	810	127	18.51	9	37	46
Teachers, Librarians, Counselors	129250	151190	21942	16.98	1571	3912	5483
College and University Faculty	18400	21200	2807	15.26	202	669	871
Lecturers	310	400	97	31.60	7	12	19
Nursing Instructors	890	1060	166	18.61	12	40	52
Graduate Assistants, Teaching	3070	3510	437	14.24	31	110	141
Life Science Teachers	1740	2000	259	14.89	19	63	82
Chemistry Teachers	390	450	59	15.01	4	14	18
Physics Teachers	260	290	38	14.90	3	9	12
All Other Phys. Science Teachers	140	160	21	15.00	2	5	7
Social Science Teachers	1710	1960	255	14.92	18	62	80
Health Specialties Teachers	390	450	59	15.01	4	14	18
English & Foreign Lang. Teachers	1300	1490	193	14.87	14	45	59
Art, Drama, and Music Teachers	1260	1440	187	14.89	13	45	58
Engineering Teachers	830	960	124	14.90	9	30	39
Mathematical Science Teachers	810	930	121	14.96	9	29	38
Computer Science Teachers	290	330	42	14.74	3	10	13
All Other Post Secondary Teacher	5020	5770	749	14.92	54	181	235
Teachers and Instructors	96170	113040	16869	17.54	1205	2650	3855
Teachers,Preschool & Kindergartn	7150	8960	1817	25.43	130	89	219
Teachers, Elementary	27630	31850	4229	15.31	302	758	1060
Teachers, Secondary School	30240	35370	5126	16.95	366	646	1012
Teachers, Special Education	7390	8450	1053	14.25	75	204	279
Teachers, Vocational Education	4760	5810	1050	22.06	75	193	268
Instructors, Nonvocational Educ.	7820	9260	1441	18.42	103	312	415
Instructors and Coaches, Sports	4800	5870	1076	22.44	77	195	272
Farm & Home Management Advisors	660	610	-50	-7.56	-4	23	19
All Other Teachers, Instructors	5730	6850	1127	19.68	81	230	311
Librarians, Archivists, Curators	5110	5830	713	13.94	52	272	324
Librarians, Professional	3270	3700	434	13.28	31	173	204
Technical Assistants, Library	1530	1750	220	14.36	16	81	97
Audio-Visual Specialists	240	270	36	15.19	3	13	16
Curators,archivists, Museum Tech	80	100	23	29.87	2	5	7
Educational Support	9570	11120	1553	16.23	112	321	433
Vocational & Educ. Counselors	2310	2770	458	19.84	33	46	79
Instructional Coordinators	890	1030	147	16.59	11	35	46

Professional, Paraprofessional, and Technical Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Teachers Aides, Paraprofessional	6370	7320	948	14.87	68	240	308
Health Practitioners,Technicians	90440	118640	28206	31.19	2016	2760	4776
Health Treating Practitioners	14690	16360	1677	11.42	120	983	1103
Physicians and Surgeons	9500	10630	1130	11.89	81	571	652
Dentists	3230	3570	342	10.60	24	261	285
Optometrists	900	790	-119	-13.16	-9	63	54
Podiatrists	240	250	12	5.08	1	31	32
Veterinarians, Vet. Inspectors	480	680	204	42.59	15	25	40
All Other Health Practitioners	340	450	108	31.76	8	32	40
Therapists	6300	8630	2326	36.93	168	90	258
Respiratory Therapists	960	1330	371	38.57	27	4	31
Occupational Therapists	870	1310	447	51.62	32	21	53
Physical Therapists	1290	2030	738	57.30	53	19	72
Correct. & Manual Arts Therapist	50	60	11	21.15	1	1	2
Speech Pathologists,audiologists	1420	1790	361	25.35	26	13	39
Recreation Therapists	720	940	223	31.02	16	14	30
All Other Therapists	990	1160	175	17.71	13	18	31
Health Care Maintenance,Treating	51640	70300	18669	36.16	1334	1402	2736
Registered Nurses	31200	44520	13315	42.68	951	905	1856
Licensed Practical Nurses	12010	15750	3747	31.21	268	237	505
Emergency Medical Technicians	2240	2580	333	14.85	24	38	62
Physician Assistants	700	840	141	20.17	10	26	36
Opticians, Dispensing & Measur.	1290	1320	28	2.17	2	25	27
Pharmacists	2940	3730	786	26.71	56	118	174
Dietitians and Nutritionists	900	1140	248	27.71	18	38	56
Dietetic Technicians	360	430	71	19.78	5	15	20
Med. Technicians & Technologists	17820	23350	5534	31.06	394	285	679
Med./Clinical Lab. Technologists	3040	3910	868	28.52	62	39	101
Med./Clinical Lab. Technicians	1420	1840	425	29.99	30	18	48
Dental Hygienists	2020	2790	772	38.26	55	26	81
Medical Records Techn.& Technol.	1170	1970	800	68.32	57	38	95
Nuclear Medicine Technologists	220	300	74	33.04	5	3	8
Radiologic Technologists	1050	1360	308	29.33	22	12	34
Radiologic Technicians	1410	1820	410	29.08	29	16	45
Electroencephalograph Techn.	100	150	53	53.54	4	2	6
Electrocardiograph Technicians	290	370	82	28.77	6	5	11
Surgical Technicians	870	1300	426	48.91	30	17	47
All Other Health Prof.,Para,Tech	6230	7540	1316	21.13	94	109	203
Writer, Artist, Enter., Athlete	24890	30750	5857	23.53	420	899	1319

Professional, Paraprofessional, and Technical Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Writers and Editors	3510	4400	895	25.53	64	190	254
Technical Writers	450	510	57	12.69	4	15	19
Public Relations Specialists	1440	1950	508	35.18	36	59	95
Reporters and Correspondents	1840	2250	413	22.46	30	79	109
Broadcast News Analysts	190	200	12	6.49	1	7	8
Announcers, Radio and TV	1230	1310	84	6.83	6	10	16
Announcers, Other	*	*	*	*	*	*	*
Photographers	1980	2530	559	28.30	40	51	91
Camera Operators, TV & Movies	130	150	24	18.75	2	3	5
Broadcast Technicians	350	350	0	0.00	0	6	6
Film Editors	30	30	4	13.33	0	1	1
Artists and Related Workers	2990	3670	679	22.69	49	98	147
Designers, Exc. Interior Design.	3460	4100	641	18.54	46	118	164
Interior Designers	1370	1640	270	19.69	19	47	66
Merchandise Displayers	480	570	89	18.50	6	16	22
Music Directors, Singers, & Rel.	1780	2380	597	33.54	43	84	127
Musicians, Instrumental	2070	2740	670	32.41	48	97	145
Dancers and Choreographers	130	170	39	30.00	3	1	4
Prod.,Direct.,Actors,Entertainer	380	470	93	24.47	7	4	11
Athlete, Coach, Umpire & Related	1100	1320	223	20.29	16	13	29
Other Profes. & Technical Occup.	1450	1820	370	25.45	27	72	99
Air Traffic Controllers	250	290	36	14.46	3	4	7
Traffic Technicians	30	30	1	4.00	0	0	0
Radio Operators	160	170	8	4.91	1	3	4
Funeral Directors and Morticians	860	1140	283	33.06	20	63	83
Embalmers	150	190	40	25.97	3	2	5
All Other Technicians	*	*	*	*	*	*	*
All Other Prof.,Paraprof.,Techn.	14860	17320	2464	16.59	176	225	401

Source: DILHR Labor Market Information, 1989

Sales and Related Occupations

Employment in sales occupations will grow due both to growth in the industries that employ sales personnel and to increasing competition which puts more emphasis upon sales.

As expected from the industry growth projections, service sales, securities and financial service sales, and retail sales are projected to have the fastest growth. Retail salespersons is by far the sales occupation with the most workers, and it is projected to have rapid growth. Travel agents showed the lowest amount of growth, due to both use of computers which permits one agent to serve more people and to the slower growth projected for the transportation industry.

Sales and Related Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Sales and Related Occupations	228470	279830	51363	22.48	3671	10191	13862
First Line Supervisors, Sales	15030	17840	2807	18.68	201	670	871
Sales Occupations, Services	21580	26790	5211	24.15	372	952	1324
Insurance Sales Workers	7380	9300	1914	25.93	137	320	457
Brokers, Real Estate	930	1170	242	26.05	17	55	72
Sales Agents, Real Estate	990	1230	239	24.17	17	58	75
Real Estate Appraisers	630	790	157	25.00	11	37	48
Securities, Financial Serv.Sales	3020	3880	862	28.58	62	115	177
Sales Agents, Business Services	2760	3310	552	20.04	39	91	130
Travel Agents	1770	1930	164	9.29	12	89	101
Sales Agents, Advertising	2890	3620	730	25.24	52	120	172
All Other Service Sales Occ.	1220	1570	351	28.82	25	67	92
Commodity Sales	183190	224850	41656	22.74	2977	8241	11218
Sales Engineers	2650	2900	254	9.60	18	105	123
Sales Reps,Scientif.Prod.Exc.Ret	8580	10080	1505	17.55	108	378	486
Sales Reps.Exc.Scientif & Retail	31370	36920	5545	17.67	396	1383	1779
Salespersons, Retail	67260	86350	19090	28.38	1364	3802	5166
Salespersons, Parts	7190	8770	1583	22.02	113	169	282
Counter and Rental Clerks	2540	3380	837	32.94	60	158	218
Stock Clerks, Sales Floor	21700	25060	3367	15.52	241	1120	1361
Cashiers	39700	48640	8942	22.53	639	1029	1668
Vendors,Solicitors,Door-to-Door	2030	2520	490	24.20	35	79	114
Demonstrators, Promoters, Models	190	230	43	22.87	3	18	21
All Other Sales & Related Occ.	8680	10360	1689	19.47	121	328	449

Source: DILHR Labor Market Information, 1989

Clerical and Administrative Support Occupations

Traditional clerical and administrative support occupations are changing to include computer skills, some of which go beyond entry and manipulation of data. Some office jobs are increasing because of automation, including text composition, and computer and peripheral equipment operators.

Automation is now causing decreases in employment of data entry clerks (other than composing), a job that a few years ago grew rapidly because of the computer. Other occupations declining because of automation include payroll and timekeeping clerks, insurance policy processing clerks, and statistical clerks. Years ago the number of stenographers was expected to decrease with the invention of the dictaphone, but the occupation continued to grow until today's more general office automation became available.

Another force adding to change in clerical and administrative support occupations will be the decreasing supply of young women due both to the demographic decline in the number of young workers and to the increase in alternate opportunities for women. This will increase investment in automation to improve productivity and will increase benefits in order to recruit and retain workers.

Many clerical jobs are named after the industry or the special service performed. As might be expected, growth in these jobs depends upon the projection for the industry. Some with rapid growth are advertising clerks, brokerage clerks, insurance adjusters and investigators, and the growing number of travel clerks in membership organizations.

Clerical and Administrative Support Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Clerical & Admin. Support Occ.	339440	379080	39640	11.68	2830	10546	13376
First Line Supervisors, Clerical	14450	17090	2649	18.34	189	457	646
Industry Specific Support Occ.	43860	50980	7123	16.24	508	1052	1560
Banking,Security,Finance,Credit	21360	24660	3306	15.48	236	467	703
Tellers	11080	12440	1360	12.27	97	139	236
New Accounts Clerks	1650	1990	342	20.74	24	67	91
Transit Clerks	470	580	111	23.67	8	14	22
Loan Interviewers	110	130	24	22.43	2	3	5
Credit Authorizers	200	160	-41	-20.40	-3	5	2
Credit Checkers	550	590	42	7.69	3	16	19
Loan and Credit Clerks	2670	3230	559	20.92	40	85	125
Adjustment Clerks	3480	4040	559	16.05	40	104	144
Statement Clerks	830	1130	293	35.22	21	25	46
Brokerage Clerks	320	370	57	18.04	4	9	13
Records Processing Occ.Exc Finan	22500	26310	3817	16.97	272	585	857
Insurance Adjusters,investigator	3280	4350	1067	32.49	76	54	130
Insurance Appraisers, Auto Damag	260	310	56	21.71	4	4	8

Clerical and Administrative Support Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Insurance Examining Clerks	20	20	4	20.00	0	0	0
Insurance Claims Clerks	1500	1600	97	6.46	7	22	29
Insurance Policy Process. Clerks	3260	3010	-252	-7.72	-18	90	72
Welfare Eligibility Workers	870	980	113	12.99	8	16	24
Investigators, Clerical	40	60	14	31.82	1	1	2
Bill and Account Collectors	1450	1890	442	30.48	32	65	97
Court Clerks	600	740	140	23.53	10	19	29
Municipal Clerks	1210	1350	147	12.20	11	37	48
License Clerks	130	150	14	10.69	1	4	5
Travel Clerks	180	240	56	30.77	4	4	8
Reservation & Trans.Ticket Agent	750	790	48	6.44	3	14	17
Hotel Desk Clerks	1260	1640	375	29.76	27	50	77
Library Assistants & Bookmobile	1940	2110	173	8.91	12	57	69
Teacher Aides & Educ. Assistants	4770	5800	1027	21.54	73	101	174
Advertising Clerks	280	390	112	40.29	8	12	20
Proofreaders and Copy Markers	320	410	86	26.54	6	19	25
Real Estate Clerks	380	480	98	25.93	7	16	23
Secretarial, General Office Occ.	200780	224460	23681	11.79	1691	6832	8523
Secretaries	57100	68300	11196	19.61	800	1737	2537
Legal Secretaries	4070	5250	1183	29.10	85	129	214
Medical Secretaries	3060	3990	923	30.12	66	98	164
General Secretaries	49980	59070	9090	18.19	649	1510	2159
General Office Occupations	143670	156160	12485	8.69	891	5095	5986
Stenographers	2520	1810	-708	-28.08	-51	98	47
Receptionists,information Clerks	12050	14570	2515	20.87	180	358	538
Typists	11570	13600	2033	17.57	145	262	407
Typists, Word Processing Equip.	4930	5920	997	20.24	71	113	184
Personnel Clerks, Except Payroll	1750	1910	156	8.90	11	43	54
Correspondence Clerks	710	850	144	20.43	10	13	23
File Clerks	4520	4630	101	2.23	7	117	124
Order Clerks: Materials, Service	5370	5340	-29	-0.54	-2	138	136
Procurement Clerks	820	800	-28	-3.40	-2	24	22
Statistical Clerks	750	580	-164	-21.98	-12	20	8
Interviewing Clerks,Ex.Personnel	1640	2190	553	33.70	40	70	110
Customer Service Reps, Utilities	1380	1530	157	11.40	11	37	48
Bookkeeping & Accounting Clerks	41730	41800	67	0.16	5	1733	1738
Payroll and Timekeeping Clerks	4030	3430	-597	-14.81	-43	124	81
Billing, Cost and Rate Clerks	5150	5130	-15	-0.29	-1	115	114
General Office Clerks	44760	52060	7303	16.32	522	1830	2352

Clerical and Administrative Support Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Data Proc,Comm Equip,Distrib,Occ	80360	86550	6187	7.70	442	2205	2647
Data Processing, Office Machines	16080	16750	667	4.15	47	208	255
Bill., Post, Calculating Mach.op	1650	1660	7	0.42	1	22	23
Duplicating Machine Operators	590	730	136	22.93	10	7	17
Mail Machine Operators	500	630	132	26.40	9	20	29
Computer Operators, Exc. Periph.	3980	5420	1434	35.99	102	37	139
Peripheral Edp Equip. Operators	650	910	258	39.51	18	14	32
Data Entry Keyers, Ex. Composing	7110	5460	-1648	-23.17	-118	67	-51
Data Entry Keyers, Composing	300	410	113	37.92	8	4	12
All Other Office Mach. Operators	1290	1520	235	18.29	17	37	54
Communications Equip. Operators	4830	5290	460	9.53	33	160	193
Switchboard Operators	4290	4700	410	9.55	29	141	170
Directory Assistance Operators	370	410	35	9.43	3	12	15
Central Office Operators	110	120	10	8.85	1	4	5
Telegraph and Teletype Operators	20	20	2	10.53	0	1	1
All Other Communication Operator	30	40	3	8.82	0	2	2
Mail & Message Distrib. Worker	9580	10690	1110	11.59	79	391	470
Mail Clerks, Exc. Mail Machine	1630	1750	117	7.19	8	52	60
Postal Mail Carriers	5290	6020	729	13.79	52	205	257
Postal Service Clerks	1710	1880	173	10.12	12	68	80
Messengers	960	1050	91	9.51	7	66	73
Material Record., Sched.,Distrib	42360	45010	2659	6.28	191	1211	1402
Dispatcher:police,Fire,ambulance	1350	1510	160	11.87	11	36	47
Dispatchers: Exc. Pol.,Fire,amb.	1740	1960	224	12.90	16	47	63
Production, Expediting Clerks	4570	5350	773	16.90	55	137	192
Transportation Agents	120	120	8	6.90	1	3	4
Meter Readers, Utilities	980	870	-104	-10.63	-7	23	16
Weighers, Measurers, Checkers	540	570	29	5.40	2	18	20
Marking Clerks	1300	1520	222	17.06	16	43	59
Stock Clerks:stockroom or Wareh.	13520	13370	-145	-1.07	-10	402	392
Order Fillers, Sales	3340	3460	120	3.59	9	102	111
Traffic, Shipping, & Rec. Clerks	12880	13920	1036	8.04	74	334	408
All Other Material Workers	2020	2360	336	16.64	24	66	90
All Other Clerical & Adm.Support	7520	8810	1291	17.17	92	235	327

Source: DILHR Labor Market Information, 1989

Service Occupations

Many of the service occupations are found predominantly in the service industry. As expected from the health services industry projections, rapid growth is expected in health occupations

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Many people in some of the fastest growing service occupations are employed in small business or are self-employed. These include most of the personal service and private household occupations.

The fact that more people are eating out is reflected in the high growth of restaurant occupations such as food service workers, waiters and waitress and bartenders.

These service occupations include most of the part time, temporary, and entry jobs traditionally held by young workers who are either in school or coming out of school. The decline in birth rates which began in the 1970's will mean fewer young workers as reported in *Wisconsin Industrial Projections to 2000*. This shortage of younger workers will probably result in some increase in wages and benefits and may slow employment growth.

Service Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Service Occupations	379180	463290	84108	22.18	6012	16934	22946
First Line Supervisors, Service	12170	14610	2432	19.98	174	663	837
Fire Fighting & Prev.Supervisors	870	1010	143	16.47	10	23	33
Police and Detective Supervisors	1460	1740	289	19.86	21	30	51
Housekeepers, Institutional	1450	1790	337	23.19	24	290	314
All Other Service Supervisors	8400	10060	1663	19.80	119	320	439
Private Household Occupations	1620	2140	515	31.73	37	186	223
Cooks, Private Household	40	50	12	32.43	1	1	2
Housekeepers and Butlers	70	90	21	32.31	2	2	4
Child Care Wkrs., Pvt. Household	630	830	199	31.79	14	23	37
Cleaners & Servants, Pvt. House.	900	1180	283	31.62	20	160	180
Protective Service Occupations	29320	35080	5760	19.64	411	1405	1816
Fire Inspectors	110	120	11	10.38	1	4	5
Forest Fire Inspect & Prevention	90	100	10	11.24	1	3	4
Fire Fighters	4710	5490	775	16.44	55	64	119
Police Detectives	1020	1130	114	11.18	8	12	20
Police Patrol Officers	6670	7820	1146	17.18	82	83	165
Correction Officers and Jailers	2480	3270	795	32.08	57	56	113
Parking Enforcement Officers	160	180	18	11.18	1	6	7
Bailiffs	230	250	25	11.01	2	8	10
U.S. Marshalls	20	20	2	13.33	0	1	1
Criminal Investigators, Federal	80	90	9	11.25	1	1	2
Sheriffs & Other Law Enforcement	1890	2160	272	14.38	19	100	119

Service Occupations Wisconsin 1986 to 2000							
Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Sheriffs and Deputy Sheriffs	1390	1540	155	11.19	11	51	62
Private Detective & Investigator	500	620	117	23.35	8	49	57
Railroad Police & Special Agents	*	*	*	*	*	*	*
Other Protective Service Workers	10370	12740	2369	22.85	169	1050	1219
Fish and Game Wardens	190	210	20	10.70	1	7	8
Crossing Guards	1370	1470	99	7.23	7	176	183
Guards and Watch Guards	8810	11060	2250	25.53	161	867	1028
All Other Protective Service	1510	1720	214	14.22	15	17	32
Food and Beverage Occupations	178860	215260	36405	20.35	2602	5898	8500
Hosts & Hostesses: Rest., Lounge	3610	4290	684	18.95	49	123	172
Bartenders	30610	37200	6589	21.53	471	1414	1885
Waiters and Waitresses	45300	55290	9996	22.07	714	644	1358
Food Servers, Outside	1520	1950	428	28.10	31	17	48
Dining Room & Bartender Helpers	10220	12890	2676	26.19	191	206	397
Counter Attendants	4890	5780	882	18.02	63	52	115
Bakers, Bread and Pastry	3860	5080	1212	31.37	87	183	270
Butchers and Meat Cutters	4180	4900	725	17.36	52	193	245
Cooks, Restaurant	11800	14510	2715	23.02	194	538	732
Cooks, Institution or Cafeteria	8820	9720	904	10.26	65	379	444
Cooks, Specialty Fast Food	9630	11260	1633	16.97	117	427	544
Cooks, Short Order	3190	3780	593	18.60	42	41	83
Food Preparation Workers	20340	24110	3770	18.53	269	936	1205
Comb. Food Preparation, Service	13200	15380	2183	16.54	156	472	628
All Other Food Service Workers	7710	9120	1415	18.36	101	273	374
Health Service Occupations	50420	63260	12836	25.46	917	1781	2698
Dental Assistants	3630	4870	1235	34.01	88	43	131
Medical Assistants	2300	3210	905	39.31	65	58	123
Nursing Aides and Orderlies	35040	42960	7922	22.61	566	1287	1853
Home Health Aides	2930	3880	957	32.70	68	124	192
Psychiatric Aides	1700	1970	269	15.80	19	61	80
Physical, Correct.Therapy Assist	710	1030	317	44.40	23	18	41
Occupational Therapy Assistants	340	480	140	40.70	10	9	19
Ambulance Drivers & Attendants	370	410	45	12.33	3	8	11
Pharmacy Assistants	1580	2020	446	28.32	32	38	70
All Other Health Service Workers	1820	2420	600	32.93	43	135	178
Cleaning & Building Service Occ.	62240	75870	13631	21.90	974	4993	5967
Maids and Housekeeping Cleaners	11840	15170	3328	28.11	238	987	1225
Janitors and Cleaners, Exc.Maids	44340	53810	9468	21.35	676	3534	4210
Pest Controllers and Assistants	230	230	8	3.56	1	15	16

Service Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Elevator Operators	10	20	3	21.43	0	1	1
All Other Clean,building Service	5820	6640	824	14.16	59	456	515
Personal Service Occupations	36900	47510	10609	28.75	760	1460	2220
Barbers	3540	4820	1288	36.43	92	460	552
Hairdressers and Cosmetologists	19210	25130	5923	30.83	423	534	957
Manicurists	180	260	77	42.08	6	5	11
Shampooers	40	50	11	28.95	1	1	2
Amusement & Recreation Attendant	2160	2770	609	28.17	44	51	95
Guides	310	390	81	26.38	6	13	19
Ushers, Lobby Att., Ticket Taker	490	650	162	33.26	12	7	19
Baggage Porters and Bellhops	300	340	41	13.76	3	10	13
Flight Attendants	30	30	3	10.34	0	0	0
Transportation Attendants	*	*	*	*	*	*	*
Wardrobe & Dress.Room Attendants	40	50	13	34.21	1	3	4
Social Welfare Service Aides	460	570	109	23.85	8	19	27
Child Care Workers	9980	12210	2235	22.40	160	344	504
Funeral Attendants	180	230	57	32.20	4	13	17
All Other Service Workers	7630	9550	1920	25.17	137	548	685

Source: DILHR Labor Market Information, 1989

Agricultural, Forestry and Fishing Occupations

There are 80,000 farms in Wisconsin which are not included in these projections. The projected agricultural, forestry, and fishing occupations are primarily in the agricultural and forestry service industries.

Gardeners and groundskeepers are expected to have the fastest growth and over two thirds of the job openings. Many people in this occupation are self-employed. Other occupations with projected growth are timber cutting workers, and animal caretakers.

Agricultural,,Forestry, and Fishing Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Agriculture, Forestry, Fishing	18760	23680	4916	26.20	350	1097	1447
Farm Operators and Managers	150	180	36	24.32	3	8	11
Farmers	90	120	28	30.43	2	3	5
Farm Managers	60	60	8	14.29	1	5	6
Supervisors, Farm, Forest,Ag.Rel	670	700	33	4.95	2	22	24
Forestry and Logging Occupations	2270	2790	521	22.98	37	70	107
Fallers and Buckers	1210	1480	264	21.80	19	43	62
Choke Setters	40	40	6	16.22	0	1	1
Log Handling Equipment Operators	370	450	84	22.95	6	13	19
Logging Tractor Operators	580	740	154	26.37	11	11	22
All Other Timber Cutting Workers	70	80	13	18.84	1	2	3
Farm Occupations	840	820	-21	-2.49	-2	26	24
Farm Workers	840	820	-21	-2.49	-2	26	24
Fishers, Hunters, and Trappers	*	*	*	*	*	*	*
Fishers, Hunters, and Trappers	*	*	*	*	*	*	*
Other Agriculture & Forestry Occ	13590	17770	4186	30.81	299	929	1228
Forest and Conservation Workers	1180	1350	168	14.24	12	54	66
Nursery Workers	310	370	63	20.52	5	14	19
Log Graders and Scalers	140	160	20	13.89	1	5	6
Graders & Sorters, Agric.Product	270	310	47	17.67	3	12	15
Gardeners and Groundskeepers	10120	13790	3661	36.16	262	799	1061
Animal Caretakers, Except Farm	890	1110	222	25.06	16	20	36
Farm Equipment Operators	680	680	5	0.74	0	25	25
All Other Agric.,Forest,Fish.	1240	1400	159	12.78	11	42	53

Source: DILHR Labor Market Information, 1989

Precision Production and Repair Occupations

These are predominantly skilled occupations found in manufacturing, construction, business services and repair industries. These occupations generally require ability to read manuals, diagrams and mathematical formulas, and some education in science to understand how things work as well as specific training in the occupation. Because of knowledge obtained through their work, often people in these occupations are the first to be trained when new automated equipment becomes available.

Most of the employment is in manufacturing and construction where little employment growth is expected, but where a large number of people will be needed to replace separations from the labor force.

The most rapid growth will be in occupations in the service industries including data processing equipment repairers, electrical and electronic repairers, and septic tank and sewer services.

Precision Production and Repair Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Production, Oper., Maintenance	658510	713010	54492	8.27	3899	19539	23438
Blue Collar Worker Supervisors	30930	33850	2916	9.43	208	945	1153
First Line Superv.:mech.& Repair	7000	8040	1040	14.87	74	257	331
First Line Superv.:const.Extrac.	3150	3320	167	5.30	12	108	120
First Line Superv.: Production	15320	16460	1140	7.44	81	462	543
First Line Superv.: Transport.	2190	2340	158	7.23	11	50	61
First Line Superv.:help,Laborers	1510	1590	77	5.09	6	7	13
All Other First Line Supervisors	1760	2100	334	18.93	24	61	85
Inspectors & Related Occupations	11970	12940	973	8.13	70	393	463
Precision Inspec.,Testers,&Grade	3760	4150	390	10.37	28	112	140
Production Inspectors, Graders	7680	8160	473	6.16	34	260	294
Transportation Inspectors	90	100	4	4.40	0	6	6
All Other Inspectors, Testers	430	540	106	24.59	8	15	23
Mechanics, Installers, Repairers	30620	35550	4930	16.10	351	1084	1435
Machinery Mechanics:textile Mach	140	120	-22	-15.71	-2	4	2
Machinery Mechanics: Sewing Mach	90	80	-15	-15.96	-1	2	1
Machinery Mechanics:marine Equip	40	40	0	0.00	0	1	1
Machinery Mechanics: Plant	860	910	54	6.29	4	25	29
All Other Machinery Mechanics	6190	6570	380	6.14	27	177	204
Millwrights	2260	2640	384	17.03	27	69	96
Refractory Material Repairers	120	110	-1	-0.87	0	4	4
Machinery Maintenance Workers	1390	1460	70	5.04	5	60	65
Maintenance Repairers, Gen.Util.	19530	23610	4080	20.89	291	742	1033
Vehicle & Mobile Equip. Mechanic	33580	37620	4035	12.01	288	781	1069

Precision Production and Repair Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Automotive Mechanics	16170	18100	1935	11.97	138	394	532
Automotive Body,Related Repairer	5530	6310	785	14.20	56	105	161
Motorcycle Repairers	290	320	33	11.50	2	5	7
Bus, Truck, Diesel Eng. Mechanic	5620	6710	1089	19.39	78	134	212
Mobile Heavy Equipment Mechanics	910	1050	142	15.64	10	24	34
Rail Car Repairers	270	310	39	14.55	3	7	10
Farm Equipment Mechanics	3190	2910	-280	-8.78	-20	84	64
Aircraft Mechanics	400	450	57	14.43	4	4	8
Aircraft Engine Specialists	40	50	8	19.51	1	2	3
Small Engine Specialists	1180	1410	227	19.22	16	22	38
Communications Equip. Mechanics	1330	1350	13	0.98	1	46	47
Central Office & Pbx Instal/Rpr.	1100	1110	4	0.36	0	39	39
Frame Wirers, Central Office	90	90	1	1.16	0	3	3
Signal or Track Switch Maint.	100	100	-2	-2.06	0	3	3
Radio Mechanics	10	20	2	15.38	0	0	0
All Other Commun.Equip.Mechanics	30	40	8	24.24	1	1	2
Electrical & Electronic Eq.Mech.	9310	10320	1005	10.79	72	264	336
Telephone & Cable TV Instal/Rpr.	2180	2030	-155	-7.10	-11	41	30
Data Processing Equip. Repairers	680	1050	365	53.52	26	5	31
Home Entertainment Eq. Repairers	1070	1190	119	11.10	9	47	56
Electr. Home Appl. & Power Tool	880	1070	181	20.48	13	44	57
Electric Motor Repairers	410	520	110	27.03	8	21	29
Electronics Repairers,Comm.&Ind.	430	540	109	25.17	8	17	25
Powerhouse & Relay Electricians	270	290	16	5.93	1	10	11
Electrical Powerline Instal/Rpr.	2210	2430	215	9.73	15	35	50
Teleph. Station Install.& Repair	370	330	-41	-11.05	-3	5	2
Electrical Installers & Repairer	220	250	25	11.36	2	11	13
All Other Electric.,Electro.Mech	580	640	61	10.50	4	28	32
Other Mechanics, Installers, Rep	15780	17830	2047	12.97	147	703	850
Heating, A/C, Refrig. Mechanics	3570	4040	471	13.21	34	159	193
Precision Instrument Repairers	950	1100	145	15.23	10	75	85
Electromedical & Biomed. Repair.	120	160	36	29.75	3	10	13
Electric Meter Installers/Repair	250	270	23	9.16	2	19	21
Camera & Photographic Repairers	180	200	23	12.99	2	14	16
Watchmakers	190	180	-9	-4.81	-1	13	12
Musical Instrument Repair & Tune	190	170	-12	-6.49	-1	13	12
Locksmiths and Safe Repairers	70	90	21	30.43	2	5	7
Office Machine,Register Servicer	1020	1220	200	19.61	14	20	34
Mechanical Control Instal.& Repr	480	510	32	6.69	2	32	34

Precision Production and Repair Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Elevator Installers & Repairers	130	140	10	7.52	1	1	2
Riggers	50	50	0	0.00	0	2	2
Mobile Home Installer & Repairer	260	300	43	16.80	3	10	13
Gas Appliance Repairers	600	660	61	10.23	4	22	26
Coin & Vending Machine Servicers	640	710	72	11.32	5	25	30
Bicycle Repairers	310	320	7	2.24	1	12	13
Tire Repairers and Changers	1550	1860	311	20.04	22	64	86
Menders, Garments and Linens	330	420	84	25.38	6	14	20
All Other Mechanics, Installers	4910	5440	529	10.77	38	193	231
Construction Trades, Extractive	66920	72760	5837	8.72	418	2214	2632
Construction Workers	65290	70830	5541	8.49	396	2112	2508
Carpenters	18550	19960	1414	7.62	101	712	813
Ceiling Tile Installers	270	280	17	6.37	1	10	11
Drywall Installers	850	880	31	3.66	2	4	6
Tapers	450	470	17	3.76	1	2	3
Lathers	180	190	7	3.89	1	1	2
Electricians	8690	9440	752	8.66	54	246	300
Brick Masons	2450	2520	65	2.65	5	69	74
Stone Masons	300	300	6	2.02	0	8	8
Hard Tile Setters	240	260	17	7.14	1	6	7
Concrete and Terrazzo Finishers	1700	1830	135	7.96	10	35	45
Reinforcing Metal Workers	270	290	13	4.74	1	5	6
Plasterers and Stucco Masons	270	260	-8	-2.94	-1	10	9
Painters and Paperhangers	6840	7650	814	11.90	58	325	383
Plumber, Pipefitter, Steamfitter	6720	7340	623	9.27	45	216	261
Pipelayers	890	950	60	6.74	4	29	33
Septic Tank, Sewer Servicers	180	230	55	31.43	4	6	10
Carpet Installers	1220	1420	197	16.12	14	20	34
Floor Layers,Ex.Carpet,Wood,Tile	200	220	15	7.39	1	5	6
Air Hammer Operators	70	70	0	0.00	0	2	2
Pile Driving Operators	20	20	2	10.00	0	1	1
Paving, Surfacing, Tamping	1220	1350	135	11.08	10	50	60
Highway Maintenance Workers	5700	6340	640	11.24	46	188	234
Rail-Track Laying Equip. Oper.	260	280	15	5.73	1	8	9
Insulation Workers	830	890	60	7.22	4	9	13
Sheet Metal Duct Installers	*	*	*	*	*	*	*
Roofers	2980	3170	198	6.66	14	31	45
Glaziers	720	800	73	10.11	5	21	26
Structural Metal Workers	940	980	40	4.27	3	18	21

Precision Production and Repair Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Fence Erectors	240	250	9	3.80	1	8	9
All Other Construction Workers	2060	2200	139	6.74	10	67	77
Extractive and Blasting Workers	1630	1930	296	18.13	22	102	124
Earth Drillers, Ex. Oil & Gas	150	150	8	5.48	1	4	5
Blasters and Explosives Workers	20	20	-1	-5.26	0	0	0
Rock Splitters, Quarry	20	20	0	0.00	0	1	1
Rotary Drill Operators	*	*	*	*	*	*	*
Derrick Operators, Oil & Gas	*	*	*	*	*	*	*
Service Unit Operators	*	*	*	*	*	*	*
Roustabouts	*	*	*	*	*	*	*
Mine Cutting Machine Operators	10	10	-1	-9.09	0	0	0
All Other Mining Mach. Operators	10	10	-1	-7.69	0	0	0
All Other Extractive Occ.,Ex.Hel	*	*	*	*	*	*	*
All Other Constr. & Extractive	1410	1700	291	20.61	21	97	118
Precision Production Occupations	188460	204320	15856	8.41	1135	5723	6858
Precision Metal Workers	27630	29890	2265	8.20	162	827	989
Tool and Die Makers	6390	7650	1263	19.77	90	221	311
Precision Instrument Makers	180	200	26	14.69	2	5	7
Machinists	12500	12940	441	3.53	32	366	398
Tool Grinders,Filers,Sharpeners	1390	1470	83	5.99	6	46	52
Pattern and Model Makers, Metal	160	170	10	6.10	1	7	8
Precision Layout Workers, Metal	310	320	12	3.91	1	7	8
Shipfitters	620	500	-120	-19.45	-9	12	3
Jewelers and Silversmiths	560	630	69	12.28	5	20	25
Precision Hand Workers, Jewelry	60	70	16	27.59	1	2	3
Precision Etchers and Engravers	30	30	0	0.00	0	1	1
Sheet Metal Workers	3980	4320	345	8.68	25	117	142
Boilermakers	470	530	60	12.90	4	20	24
All Other Precision Metal Worker	1000	1060	60	6.01	4	3	7
Precision Woodworkers	6460	7410	948	14.68	68	362	430
Pattern and Model Makers, Wood	1130	1190	62	5.49	4	86	90
Pattern Markers, Wood	10	20	2	15.38	0	0	0
Wood Machinists	1560	1850	289	18.53	21	90	111
Cabinetmakers & Bench Carpenters	2400	2760	362	15.08	26	136	162
Furniture Finishers	870	1040	170	19.65	12	32	44
All Other Precision Woodworkers	490	550	63	12.86	5	18	23
Precision Textile, Apparel, Furn	4840	5240	393	8.11	27	356	383
Fabric Patternmaker,Layout Workr	190	180	-10	-5.18	-1	2	1
Custom Tailors and Sewers	2240	2440	201	8.98	14	195	209

Precision Production and Repair Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Upholsterers	860	1060	200	23.36	14	54	68
Shoe and Leather Workers	870	730	-140	-16.17	-10	59	49
Spotters, Dry Cleaning	180	240	60	34.09	4	13	17
Pressers, Delicate Fabrics	340	450	108	31.49	8	24	32
Precision Dyers	40	20	-12	-33.33	-1	2	1
All Other Precision Textile,Appa	130	120	-14	-10.45	-1	7	6
Precision Printing Workers	2870	3450	587	20.47	42	82	124
Precision Compositor, Typesetter	510	440	-66	-12.94	-5	17	12
Job Printers	180	220	45	25.57	3	7	10
Precision Lithographers & Photo.	1740	2270	533	30.61	38	41	79
Bookbinders	390	460	64	16.24	5	16	21
All Other Precision Printing	50	60	11	23.91	1	1	2
Precision Food Workers	4070	4100	30	0.74	2	148	150
Slaughterers and Butchers	960	960	4	0.42	0	41	41
Bakers, Manufacturing	1370	1460	88	6.40	6	67	73
Food Batchmakers	1550	1500	-56	-3.61	-4	36	32
All Other Precision Food,Tobacco	190	180	-6	-3.17	0	4	4
Other Precision Workers	6270	7150	875	13.96	62	178	240
Foundry Mold and Core Makers	1880	1840	-36	-1.91	-3	43	40
Molders & Shapers, Exc. Jewelry	320	370	44	13.71	3	8	11
Patternmakers, Model Makers	160	170	9	5.70	1	5	6
Detail Design Decorators & Paint	150	190	34	22.37	2	3	5
Photographic Process Workers	420	490	70	16.75	5	9	14
Optical Goods Workers	200	250	46	23.00	3	3	6
Dental Laboratory Technicians	1410	1890	486	34.52	35	42	77
Medical Appliance Makers	20	30	5	21.74	0	1	1
All Other Precision Workers	1710	1930	217	12.69	16	64	80

Source: DILHR Labor Market Information, 1989

Operator, Fabricator, and Laborer Occupations

These occupations are found primarily in manufacturing, transportation, and construction industries. Some of these occupations such as set up workers are skilled and require reading, math and science. People in these skilled occupations are likely to be trained to run new automated equipment as it is developed and installed.

Most of these occupations are not highly skilled. A combination of automation, changing products, and foreign competition will cause declining employment in some, such as shipfitters, shoe and leather workers, textile and sewing machine operators, painters in transportation equipment manufacturing, electrical and electronic assemblers, welders and cutters, and industrial truck and tractor operators.

The greatest source of employment in these occupations will be to replace separations from the labor force.

Occupations in this group that are projected to grow include metal and plastic machine set-up, lithographic press setter and other printing occupations, hand painting and coating, laundry and dry cleaning operators, and cutters, printers, painters and coaters, motor vehicle operators, service station and parking lot attendants, and hand stock movers.

Operator, Fabricator, and Laborer Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Mach.Set.,Set-Up Op.,Oper.& Tend	34580	36180	1598	4.62	115	791	906
Sawing Mach. Tool Setter/Op.,M/P	770	820	50	6.52	4	15	19
Lathe,Turning Mach.Setter/Op,M/P	3900	4010	105	2.69	8	82	90
Drilling,boring Mach.Set/Op.,M/P	2790	2840	48	1.72	3	60	63
Milling,planing Mach.Set/Op.,M/P	930	1000	68	7.28	5	15	20
Grinding,buffing Mach.Set/Op.M/P	2440	2460	21	0.86	2	68	70
Machine Tool Cutting Oper., M/P	3990	3960	-33	-0.83	-2	94	92
Punching Mach. Setter/Oper., M/P	2610	2720	107	4.09	8	67	75
Press, Brake Mach.Setter/Op.,M/P	2230	2350	128	5.75	9	57	66
Shear, Slitter Mach. Set/Op.,M/P	710	800	88	12.41	6	19	25
Extruding Mach. Setter/Oper.,M/P	640	720	73	11.35	5	11	16
Rolling Machine Setter/Oper.,M/P	80	90	3	3.61	0	2	2
Forging Machine Setter/Oper.,M/P	340	370	25	7.35	2	7	9
Machine Forming Operators, M/P	6240	6420	180	2.89	13	132	145
Numerical Control Mach.Tool, M/P	2480	2930	447	18.03	32	73	105
Combination Mach.Tool Set/Op,M/P	2630	2790	160	6.08	11	53	64
Combination Mach.Tool Oper., M/P	1790	1920	128	7.15	9	36	45
Metal Fabricating Setters & Oper	6790	7380	590	8.69	42	165	207
Welding Machine Setter/Operator	2650	2820	170	6.41	12	50	62
Welding Machine Operators	2170	2330	158	7.28	11	41	52
Soldering, Brazing Mach. Set/Op.	240	250	16	6.75	1	6	7
Soldering, Brazing Machine Oper.	170	190	12	6.94	1	4	5

Operator, Fabricator, and Laborer Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Structural Metal Fabricators	1560	1790	234	15.02	17	64	81
Metal & Plastic Process.Mach.Set	12160	13670	1505	12.37	108	270	378
Plastic Molding, Casting Set/Op.	430	530	93	21.53	7	8	15
Lathe,Turning Mach.Setter/Op,M/P	2890	3640	751	25.98	54	53	107
Metal Molding,Casting Setter/Op.	1040	1060	14	1.34	1	17	18
Metal Molding, Casting Operator	760	760	-3	-0.40	0	12	12
Foundry Mold Assembly/Shakeout	860	830	-35	-4.07	-3	14	11
Electrolytic Plating Set/Op.,M/P	300	330	27	9.00	2	5	7
Electrolytic Plating Oper., M/P	830	890	67	8.12	5	12	17
Nonelectrolytic Plating Set.,M/P	40	40	4	10.53	0	1	1
Nonelectrolytic Plating Oper.M/P	160	180	15	9.32	1	2	3
Heating Equip. Setter/Oper. M/P	320	350	31	9.75	2	7	9
Heat Treating,Tempering Mach.op.	380	410	31	8.24	2	8	10
Furnace Operators and Tenders	770	720	-47	-6.13	-3	15	12
Heaters, Metal and Plastic	40	50	7	16.28	1	1	2
All Other Met.&Plas.Mach.Set/Ops	3350	3900	550	16.42	39	115	154
Woodworking Machine Setters, Op.	4970	5860	891	17.92	64	194	258
Sawing Machine Setter/Operator	230	270	42	18.67	3	7	10
Head Sawyers	160	200	33	20.37	2	5	7
Sawing Maching Operator/Tender	2050	2420	366	17.82	26	65	91
Woodworking Machine Setter/Oper.	800	940	135	16.83	10	42	52
Woodworking Machine Operators	1730	2050	315	18.21	23	75	98
Printing, Binding, & Related Occ	14840	17950	3106	20.93	222	376	598
Printing Press Machine Setter/Op	450	470	19	4.26	1	14	15
Offset Lithographic Press Setter	1960	2790	829	42.25	59	42	101
Letterpress Setter/Operator	780	820	33	4.22	2	14	16
All Other Printing Press Set/Op.	380	480	93	24.35	7	8	15
Photoengraving & Lith. Photogra.	410	510	103	25.31	7	9	16
Specialty Materials Printing	350	360	7	1.98	1	7	8
Screen Printing Mach. Setter/Op.	530	560	33	6.21	2	15	17
Bindery Machine Setter/Operator	1340	1680	342	25.48	24	41	65
All Other Printing Setter/Oper.	640	760	119	18.62	9	19	28
Typesetting Mach. Operator/Tend.	1630	1700	75	4.61	5	58	63
Printing Press Machine Operator	4110	4990	877	21.34	63	81	144
Photoengraving & Lithog. Oper.	170	210	42	25.30	3	4	7
Bindery Machine Operators	1240	1550	317	25.67	23	38	61
All Other Printing, Binding, Rel	860	1070	217	25.32	16	26	42
Textile Mach.Operators & Related	10700	11080	382	3.57	26	563	589
Textile Machine Setter/Operator	30	30	-2	-7.14	0	1	1

Operator, Fabricator, and Laborer Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Textile Machine Operators	750	640	-105	-14.06	-8	15	7
Extruding Mach. Operator, Fibers	60	70	10	15.87	1	2	3
Textile Draw-Out Mach. Operator	*	*	*	*	*	*	*
Textile Dyeing Machine Operator	40	30	-8	-22.86	-1	1	0
Sewing Mach. Operator, Garment	3270	3060	-211	-6.46	-15	161	146
Sewing Mach. Oper., Non-Garment	1890	1860	-28	-1.48	-2	95	93
Shoe Sewing Machine Operator	500	330	-165	-33.33	-12	16	4
Laundry, Drycleaning Mach. Oper.	2890	3500	606	20.97	43	195	238
Pressing Mach.Operator, Textiles	1270	1560	285	22.37	20	77	97
Other Mach. Set,Operators,Tender	52290	54980	2686	5.14	195	1411	1606
Electronic Semiconductor	160	90	-75	-46.88	-5	3	-2
Motion Picture Projectionists	240	320	80	33.33	6	12	18
Photographic Processing Mach.Op.	920	950	22	2.38	2	18	20
Tire Building Machine Operator	460	510	48	10.39	3	10	13
Paper Goods Machine Setter/Oper.	2700	2800	103	3.82	7	49	56
Cooking Machine Oper., Food/Tob.	320	320	0	0.00	0	7	7
Roasting,Drying Oper., Food/Tob.	510	520	13	2.55	1	9	10
Furnace, Kiln, Oven,kettle Oper.	420	460	40	9.59	3	11	14
Low Pressure Boiler Operator	700	770	63	8.97	5	34	39
Cooling, Freezing Equip. Oper.	260	250	-4	-1.56	0	5	5
Dairy Processing Equip. Operator	2800	2710	-85	-3.04	-6	58	52
Chemical Equip. Controller/Oper.	510	540	30	5.86	2	11	13
Chemical Equipment Tender	240	250	10	4.20	1	5	6
Cutting and Slicing Setter/Oper.	630	650	12	1.90	1	18	19
Cutting & Slicing Machine Oper.	3920	4150	231	5.89	17	112	129
Painters, Transportation Equip.	520	390	-130	-25.15	-9	10	1
Coating, Painting Setter/Oper.	1740	1900	157	9.00	11	40	51
Coating, Painting Mach. Oper.	3140	3360	218	6.94	16	72	88
Cementing & Gluing Machine Oper.	1320	1380	61	4.62	4	29	33
Cleaning, Pickling Equip. Oper.	1150	1160	15	1.31	1	46	47
Separating, Filtering Mach. Op.	700	720	24	3.45	2	22	24
Crushing & Mixing Machine Oper.	3550	3660	105	2.96	8	101	109
Extruding, Forming Setter/Oper.	870	1010	139	16.01	10	13	23
Extruding & Forming Operator	3260	3580	313	9.59	22	46	68
Packaging & Filling Machine Oper	9180	9680	497	5.41	36	399	435
All Other Machine Setters/Oper.	1520	1680	165	10.88	12	34	46
All Other Machine Operators	10560	11190	634	6.00	45	237	282
Hand Working Occ., Inc.Assembler	87970	88960	991	1.13	70	2223	2293
Precision Assemblers	7060	7850	796	11.28	58	173	231

Operator, Fabricator, and Laborer Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Machine Builders	2640	2850	216	8.19	15	63	78
Structural Metal Fitters	180	200	17	9.24	1	3	4
Electromechanical Eq. Assembler	840	980	135	16.01	10	21	31
Electrical, Electronic Assembler	2960	3340	385	13.03	28	79	107
Watch, Chronometer Assemblers	40	50	7	16.28	1	1	2
All Other Precision Assemblers	400	430	36	9.09	3	6	9
Other Hand Workers & Assemblers	76400	76190	-211	-0.28	-16	1908	1892
Machine Assemblers	2390	2560	165	6.90	12	57	69
Electrical, Electronic Assembler	8720	4700	-4027	-46.17	-288	154	-134
Coil Winders, Tapers, Finishers	1270	1210	-59	-4.65	-4	52	48
Glazier, Manufacturing	230	270	43	18.61	3	11	14
Welders and Cutters	10120	9700	-418	-4.13	-30	179	149
Solderers and Brazers	390	450	58	14.80	4	10	14
Pressers,hand	120	120	0	0.00	0	5	5
Sewers, Hand	160	120	-36	-22.93	-3	8	5
Cutters and Trimmers, Hand	1330	1610	276	20.69	20	28	48
Portable Machine Cutters	120	110	-10	-8.47	-1	2	1
Carpet Cutters, Diagrammers	90	100	9	9.57	1	2	3
Cannery Workers	2850	2780	-63	-2.21	-5	117	112
Meat, Poultry, Fish Cutters	3280	3380	101	3.08	7	64	71
Metal Pourers, Basic Shapes	640	630	-14	-2.19	-1	10	9
Molders and Casters, Hand	160	180	15	9.38	1	3	4
Painting and Coating, Hand	710	890	182	25.63	13	40	53
Engraving and Printing, Hand	20	30	5	20.83	0	0	0
Grinding and Polishing, Hand	3740	3800	54	1.44	4	70	74
All Other Assemblers, Fabricator	33180	35690	2517	7.59	180	789	969
All Other Hand Workers	6870	7870	991	14.42	71	307	378
Plant & System Occupations	4520	4920	406	8.99	28	142	170
Water & Waste Treat. Plant Oper.	1820	2070	252	13.88	18	55	73
Gas Plant Operators	40	40	3	8.57	0	1	1
Chemical Plant and System Oper.	180	150	-29	-16.48	-2	4	2
Petroleum Pump System Operators	*	*	*	*	*	*	*
Petroleum Refinery Operators	60	30	-24	-42.86	-2	1	-1
Gaugers	*	*	*	*	*	*	*
Power Generating Plant Operator	600	650	48	7.95	3	19	22
Auxiliary Equip. Oper., Power	210	230	14	6.64	1	7	8
Power Reactor Operators	80	90	6	7.23	0	3	3
Power Distributors & Dispatchers	250	280	25	9.88	2	8	10
Stationary Engineers	440	470	34	7.80	2	21	23

Operator, Fabricator, and Laborer Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
All Other Plant and System Occ.	830	910	80	9.64	6	23	29
Transp. & Mat. Moving Mach.Oper.	96790	103130	6343	6.55	456	2946	3402
Motor Vehicle Operators	64890	71780	6887	10.61	492	2080	2572
Truck Drivers, Heavy	28540	31390	2852	9.99	204	728	932
Truck Drivers, Light	16630	19190	2560	15.39	183	518	701
Bus Drivers	2880	3340	465	16.17	33	149	182
Bus Drivers, School	8960	9670	713	7.96	51	445	496
Taxi Drivers and Chauffeurs	1370	1650	279	20.35	20	99	119
Driver/Sales Workers	5630	5420	-206	-3.66	-15	118	103
All Other Motor Vehicle Operator	880	1110	224	25.34	16	23	39
Rail Transportation Workers	1770	1930	158	8.94	12	57	69
Railroad Conductors, Yardmasters	450	490	40	8.97	3	17	20
Locomotive Engineers	290	310	26	9.06	2	11	13
Rail Yard Engineers,Dinkey Oper.	150	170	17	11.18	1	6	7
Locomotive Firers	140	150	9	6.29	1	5	6
Railroad Brake, Signal, Switch	720	780	64	8.95	5	18	23
All Other Rail Vehicle Operators	30	30	2	8.00	0	0	0
Water Transportation & Related	1240	1360	120	9.65	9	30	39
Captains, Water Vessel	80	90	5	6.25	0	5	5
Mates: Ship, Boat, and Barge	80	90	8	10.13	1	1	2
Ship Pilots	80	80	5	6.49	0	1	1
Motorboat Operators	30	30	2	7.41	0	0	0
Able Seamen	150	160	10	6.67	1	6	7
Ordinary Seamen & Marine Oilers	250	270	22	8.87	2	11	13
Ship Engineers	130	140	12	9.52	1	2	3
Aircraft Pilots,Flight Engineers	460	510	56	12.25	4	4	8
Other Transportation Workers	8600	10530	1930	22.45	138	325	463
Bridge, Lock, Lighthouse Tenders	180	200	19	10.44	1	13	14
Service Station Attendants	6330	8040	1705	26.92	122	238	360
Parking Lot Attendants	50	60	15	31.25	1	6	7
All Other Transportation Workers	2030	2220	191	9.39	14	68	82
Material Moving Equipment Oper.	20280	17530	-2752	-13.57	-195	454	259
Longshore Equipment Operators	30	30	1	3.33	0	2	2
Tank Car and Truck Loaders	30	30	0	0.00	0	1	1
Main Line Station Engineers	*	*	*	*	*	*	*
Gas Pumping Station Operators	*	*	*	*	*	*	*
Excavation Loading Machine Oper.	1000	1070	63	6.29	5	28	33
Dragline Operators	50	50	0	0.00	0	1	1
Dredge Operators, Dipper Tenders	*	*	*	*	*	*	*

Operator, Fabricator, and Laborer Occupations
Wisconsin 1986 to 2000

Occupation Titles	Estimated Employment				Annual Openings		
	1986	2000	Growth	%	Grow	Sep	Total
Grader, Dozer, Scraper Operators	960	1030	64	6.65	5	59	64
Hoist and Winch Operators	110	130	13	11.50	1	14	15
Crane and Tower Operators	820	920	104	12.73	7	26	33
Industrial Truck & Tractor Oper.	11390	7860	-3530	-31.01	-252	157	-95
Conveyor Operators and Tenders	1140	1200	68	5.99	5	21	26
Pump Operators	120	120	0	0.00	0	2	2
Operating Engineers	2960	3190	231	7.80	17	87	104
All Other Transp.,Mat.Moving Opr	1660	1890	234	14.10	17	56	73
Helper, Laborer, Mat.Mover, Hand	84840	94390	9546	11.25	683	2217	2900
Mechanic and Repairer Helpers	2390	2740	350	14.68	25	80	105
Construction Trades Helpers	4140	4310	166	4.01	12	55	67
Helpers, Masons & Tile Setters	1020	1070	47	4.61	3	14	17
Helpers, Carpenters	1390	1460	63	4.53	5	19	24
Helpers, Electricians	240	250	11	4.55	1	3	4
Helpers, Painters, Plasterers	320	330	13	4.05	1	4	5
Helpers, Plumbers, Pipefitters	420	440	17	4.01	1	6	7
Helpers, Roofers	250	260	10	3.94	1	3	4
Helpers, All Other Construction	490	500	5	1.02	0	6	6
Machine Feeders and Offbearers	6540	6780	238	3.64	17	190	207
Hand Freight, Stock, Mat. Movers	71770	80570	8792	12.25	629	1892	2521
Stevedores, Exc. Equipment Oper.	120	130	8	6.84	1	2	3
Refuse Collectors	2680	2970	287	10.71	21	149	170
All Other Hand Material Movers	13770	15630	1863	13.53	133	201	334
Hand Packers and Packagers	17940	20010	2072	11.55	148	552	700
Vehicle, Equipment Cleaners	3710	4440	730	19.69	52	80	132
All Other Helper, Laborer, Mover	33570	37400	3832	11.42	274	908	1182

Source: DILHR Labor Market Information, 1989

Chapter 5: Methodology

These occupational projections are based in part upon the industry projection published in *Wisconsin Industrial Projections to 2000.* For information concerning the industry projections, please consult that publication.
The 1986 employment by occupation within industries is based upon the Occupational Employment Statistics survey conducted by the Department of Industry, Labor and Human Relations, Labor Market Information Bureau in cooperation with the U.S. Bureau of Labor Statistics. The data is collected during a three year survey cycle. It is weighted using 1986 industry employment statistics obtained from Unemployment Compensation tax information. The result is a table with 370 industries and 719 occupations. These data are then processed using the industry/occupational microcomputer matrix projections program.

The matrix projection package computes the effect of the industry projections to the year 2000 upon occupational employment in the year 2000. The projection is calculated by multiplying each cell in the table by the ratio between 1986 employment and the projected year 2000 employment for each industry.

The U.S. Bureau of Labor Statistics provides factors for each industry and occupation to estimate the changes that will occur nationally in the distribution of employment by occupation within each industry. These factors are used in the matrix projection package to adjust Wisconsin projections for changes expected to occur in occupations within industries by the year 2000.

With the help of information provided by the U.S. Bureau of Labor Statistics, this year's projections include self-employed and unpaid family workers. These factors project different rates of growth for self-employed and for wage and salary workers in the same occupation. Numbers in this report should not be compared with earlier projections which did not include self-employed workers.

Factors provided by the Bureau of Labor Statistics are also used to estimate separations from the labor force and resulting replacement needs. These labor force separations include people who die or retire, and others who leave the labor force for such reasons as continuing education or child care, minus people who previously left and then reentered the labor force.

These projections use knowledge of past trends, current developments, and emerging technological changes to estimate what now appears to be the most likely future employment.

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